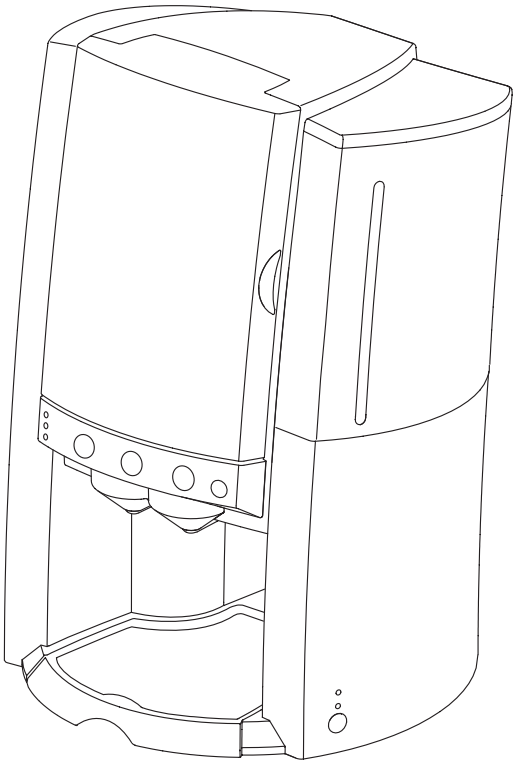
DOUWE EGBERTS



Service manual

Contenta
Cafitesse 50

Version **1.36/72X** February 2004
Part number **89210190**

A Sara Lee Company

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Introducing

The Contenta/Cafitesse 50 forms the low-end extension of the liquid coffee concentrate brewer range. Serving the 'small' segment of the out-of-home market, it is designed for outlets with an average coffee consumption of 45 cups per day without significant consumption peaks.

Entering a large and competitive market the Coffee dispenser sets a new standard with its distinctive features as compared to conventional pour-over coffee service; it excels in convenience, speed, constant product quality and design.

The Contenta/Cafitesse 50 design is geared towards convenience. It delivers (**1**) coffee either in a cup or pot that comes with the machine (additional pots are available as an accessory) and (**2**) hot water for tea or instant drinks.

In effect, the Coffee dispenser is a smaller liquid coffee brewer and the technical aspects in this manual are quite similar to that of the larger 'Cafitesse' brewers.

OCS

To exploit the mentioned inherent qualities the Contenta/Cafitesse 50 is placed in the framework of the 'Office Coffee Service'-concept (OCS). The concentrated coffee and other ingredients are distributed directly to the customer by a service/ sales representative, who also performs relevant preventive maintenance tasks, such as boiler exchange for descaling.
Extensive and/or time-consuming repairs and maintenance, such as preventive boiler decalcification is basically done in a central workshop. The customer will benefit from this system, as it greatly reduces the machine-down time.
The efficiency of this system is also warranted by the modular and straight-forward construction of the dispenser.

Safety

General remark concerning safety

This subsection is intended as an overview of the warnings and instructions used in this manual that must always be observed.

The following general safety precautions apply to the operation and maintenance of the machine and must always be observed. Non-observance of these instructions or any other safety precautions mentioned in this manual could impair the machine safety standards, lead to dangerous situations, and the manufacturer cannot be held responsible for possible damages.

Service technicians must thoroughly read and understand the Service Manual and operating instructions before they can install the dispenser and put it into operation.The service technician must hand over and explain the operating instructions to the customer.

Installation, startup, programming and, if required, repair of the dispenser must be performed by trained and authorized service technicians only.

Hazard intensity levels

There are three different levels of hazard intensity, identified by signal words DANGER, WARNING and CAUTION. The level of hazard is determined by the following definitions;

DANGER	Sudden hazards, that WILL lead to either serious personal injury or death.
WARNING	Hazards due to dangerous behaviour that CAN lead to either serious injury or death.
CAUTION	Hazards due to dangerous behavior that can lead to either minor injury to persons or damage to product.

In addition the following symbols have been added throughout the service manual to emphasize safety measures related to a specific action.

Pay particular attention to the remark preceeded by this symbol.

General warning

Risk of electric shock

Risk of contact with (very) hot liquids or objects.

OPERATION

WARNING: Do not use the machine for other than the intended use. The machine is intended for in-door operation only. Please do not place the machine too close to a sink (wet) or cooking device (hot).

CAUTION: The liquids delivered by the dispenser are hot. Keep hands and body parts clear from the delivery area while the dispenser is producing coffee or hot water. Keep children away from the machine.

CAUTION: If the dispenser is not used for a longer period of time (e.g. at night or during the week-end), set the ON/Stand-by button to Stand-by. The power source should not be interrupted completely, because the cooling system will not function. Close the water tap if a fixed water connection is installed.

CAUTION: Connect to a source of filtered drinking water and/or use filtered drinking water to (re)fill the water tank. Particularly at locations with poor water quality filtered water is highly recommended or may even be required. Observe the indicated water pressure when a fixed water connection is installed.

CAUTION: Do not store the machine at locations with a surrounding temperature below 0°C./34°F.

CAUTION: Please note that the driptray capacity is limited to 250 ml/13,5 fl oz. (1~2 cups). Please empty the driptray in case coffee or water has been delivered while no cup or pot was present.

CAUTION: The customer should clean the machine on a daily and weekly basis as described in the user manual and instruction label for hygienic and functional reasons.

CAUTION: Always observe basic hygiene and use only food-grade cleaning agents. Clean the machine parts with a clean damp cloth. Do not spray the dispenser off.

CAUTION: Please allow the internal boiler to cool off before you do relocate or move the dispenser (recommended waiting time is 3 hours). Always keep the dispenser upright when moving.

ELECTRICITY

DANGER: Never plug a power cord into a wall outlet (or unplug a power cord) when either part is wet or either part is touched with wet hands.

DANGER: Safety devices must not be bypassed or put out of action.

DANGER: Do not operate any appliance with a damaged power cord or plug.

WARNING: The dispenser must be connected to drinking water supply and to electric power supply in accordance with local regulations.

WARNING: The dispenser must be connected to a properly fused electric circuit. When the machine has been relocated, please make sure that the machine does not overload the capacity of the electrical circuit when plugged in at the new location. **Observe the local regulations!**

WARNING: Do not connect the dispenser to any power source other than indicated on the rating label.

WARNING: Never immerse power cord or the machine in water or any other liquid.

INGREDIENT HANDLING

CAUTION: Ensure that the cooling compartment is properly closed at all times. The coffee quality may otherwise deterioriate.

Store coffee packs only in a refrigerator at a temperature below 6°C/42.8°F.

Always check the expiration date on the package (‘best before date’) and use the coffee pack that has been stored for the longest period (first-in, first-out principle).

2. Unpacking and installation

2.1 Installation requirements

• Required tools

- Tools to make the required water connections, if applicable.
- A service device is needed to adjust set volumes, coffee strength, device calibration, etc.
- To remove covers a Pitcher torx no.10 (left, right, rear side cover) and no.15 (tank lid/inlet valve) is required.

• General requirements

Please ensure that the following requirements are met before you install the machine.

Ambient temperature :	1 - 32 °C / 50 - 90°F
Humidity :	up to 80 % RH

Power supply :

Europe : 230V/10A Europe / Japan :100V/12A / USA : 120V/15A

Determine the capacity of the electrical circuit before the machine is connected to prevent overload. (min. spare capacity depending on version) It is recommended to connect to an electrical circuit equipped with a fault current safety switch.
The machine must be connected to a grounded outlet conform regulations.

Water supply :
(fixed water connection)

Water pressure allowed: Min. 0.8 bar dynamic pressure/ Max. 10 bar static pressure.
Please measure in case of doubt.

Always operate in compliance with local regulations.

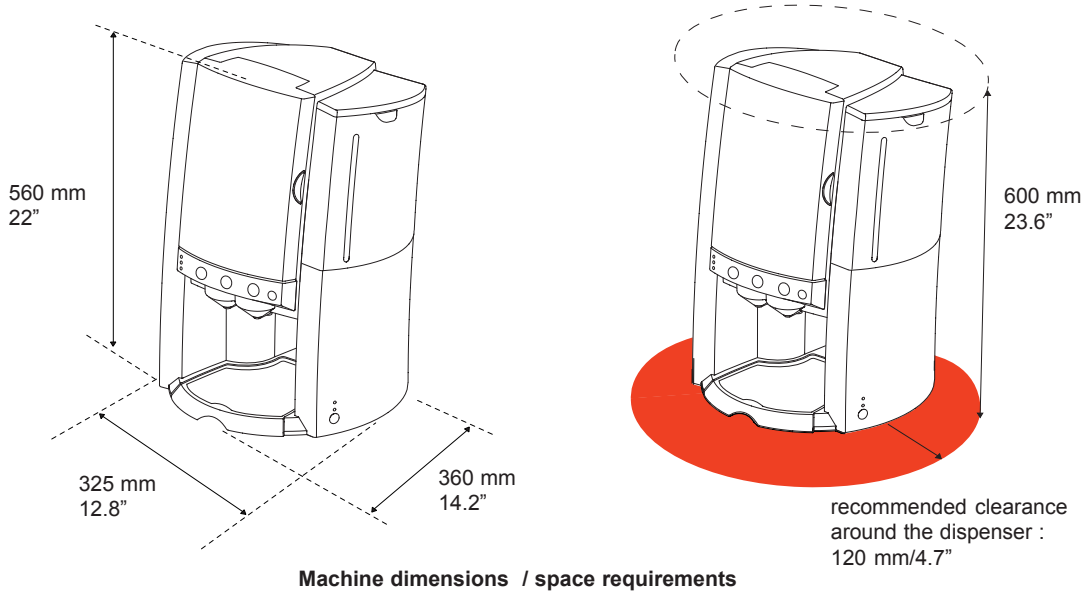
Location :

Avoid direct exposure to hot or cold air, vibration and excessive amounts of dust.

Do not install the machine in the immediate vicinity of a stove or sink to avoid extreme temperatures or humidity.

Place the machine on an even stable surface capable of supporting the weight of the machine (approx. 19 Kg.) and beyond the reach of small children.

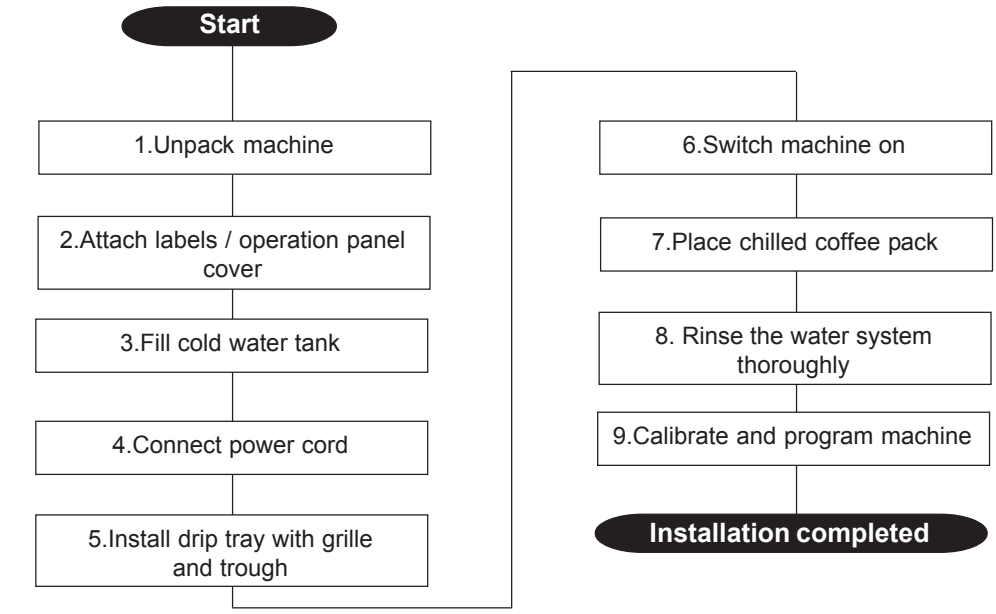
The location should allow proper access for operation and maintenance of the machine as well as enough space behind the machine for ventilation.

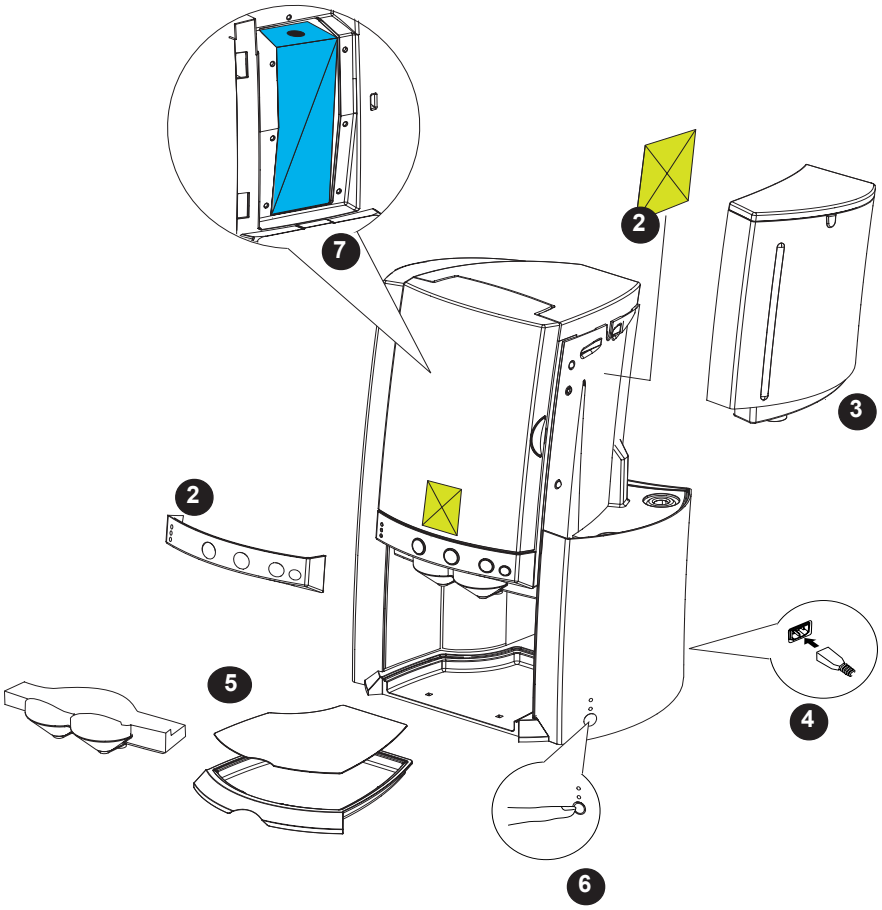


Machine dimensions / space requirements

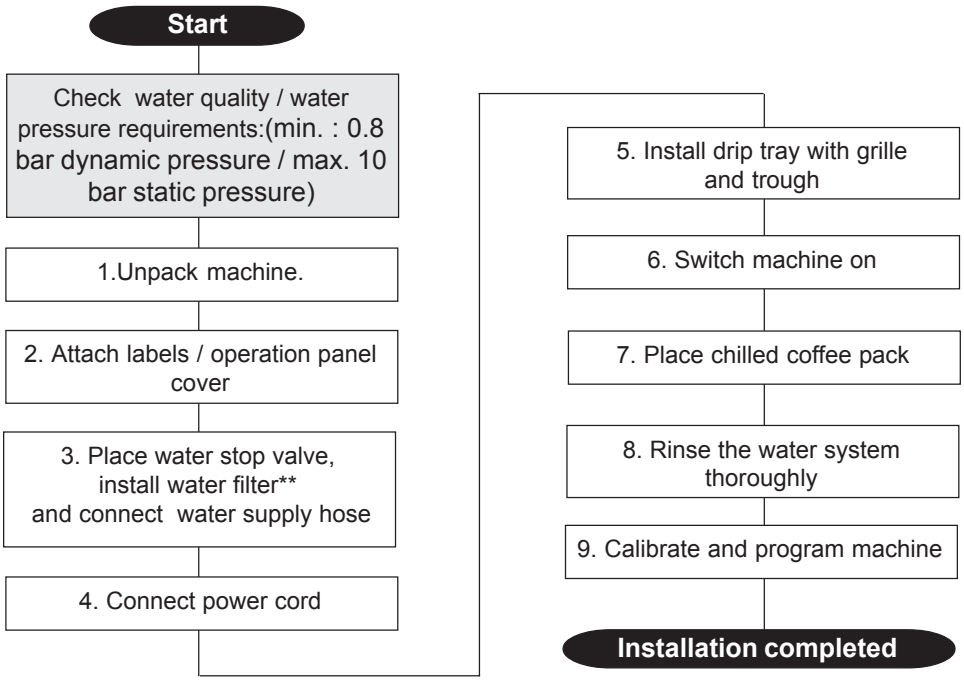
2.2 Installation procedure

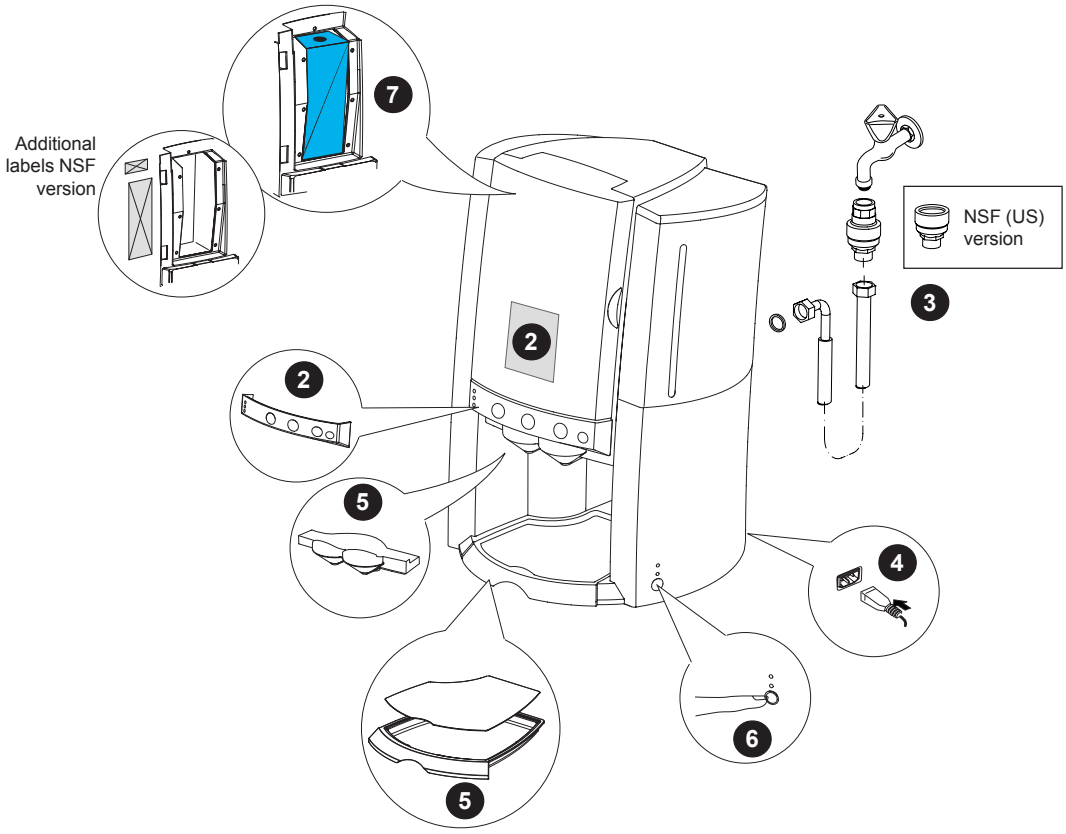
(1) Machines shipped with a removable watertank.
See chapter 5A for additional installation of the fixed water connection kit.





(2) Machines shipped with a fixed water connection (plumbed-in unit).

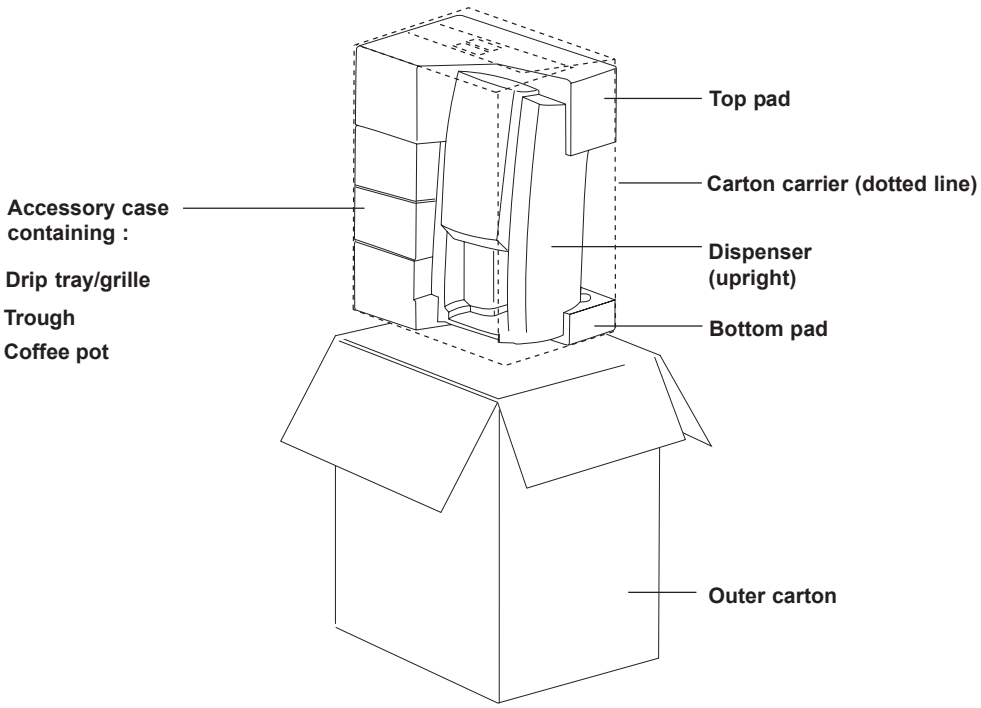

Start
Check water quality / water pressure requirements:(min. : 0.8 bar dynamic pressure / max. 10 bar static pressure)
1.Unpack machine.
2. Attach labels / operation panel cover
3. Place water stop valve, install water filter** and connect water supply hose
4. Connect power cord
5. Install drip tray with grille and trough
6. Switch machine on
7. Place chilled coffee pack
8. Rinse the water system thoroughly
9. Calibrate and program machine
Installation completed



*The numbers correspond with the steps of the procedure.
** Size and type of filter may vary depending on local circumstances. Not illustrated here

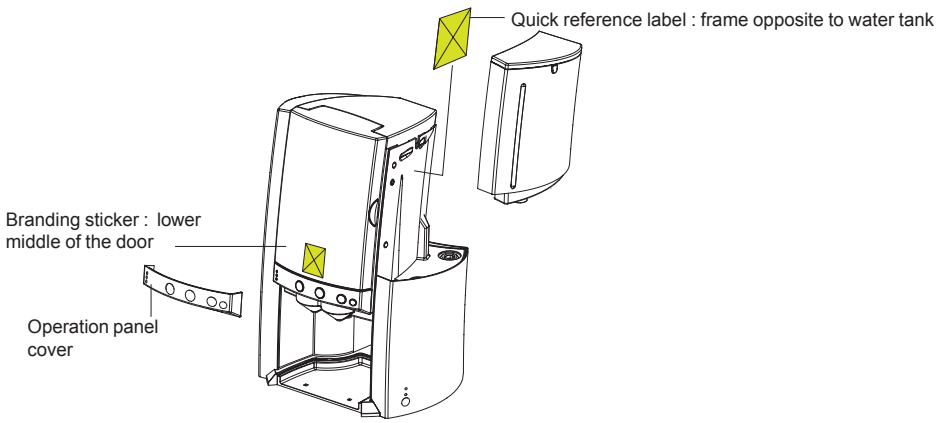
Unpacking

1. Unpack the machine.



Attach labels

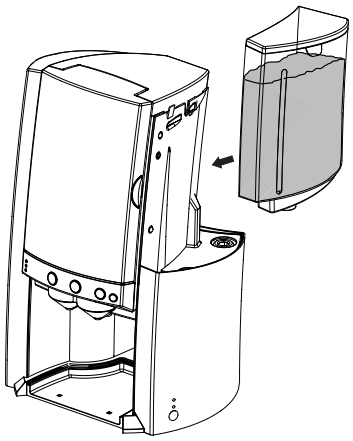
2. Attach the language specific operation panel cover and the various labels. (removable water tank version illustrated here) NSF machines feature two additional labels attached to the inside of the cooling compartment door.

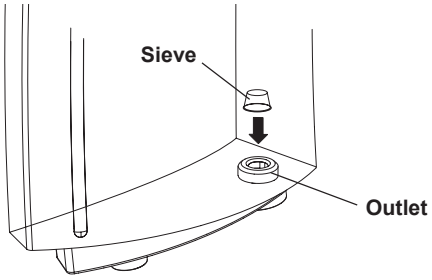


Fill the cold water tank

3. Depending on the version you are installing, proceed with 3a for machines with a removable water tank or 3b for machines with a fixed water connection.

3a. Fill the cold water tank.
(Check if the sieve inside the tank is correctly placed over the water outlet)





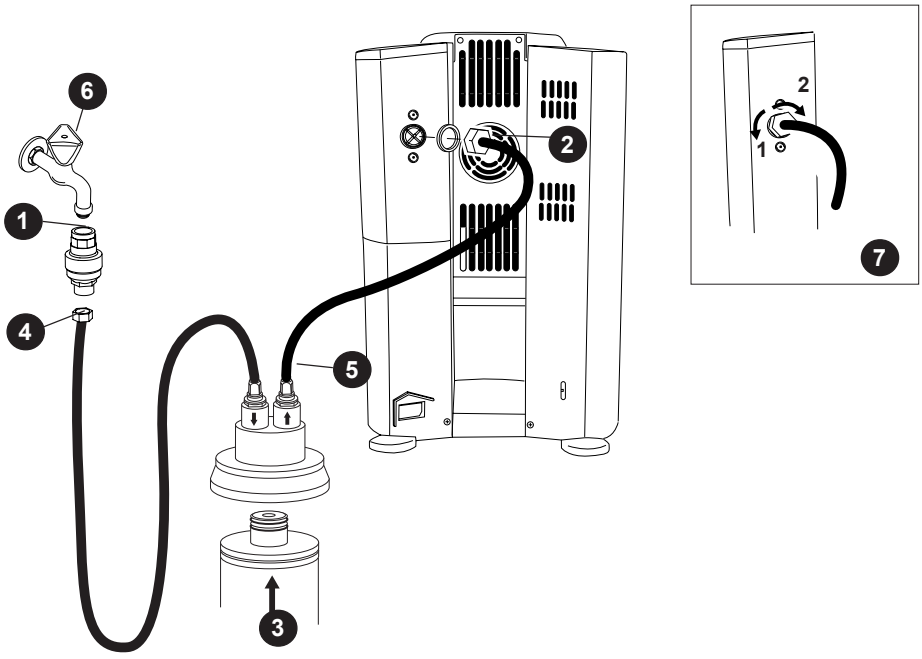
Install Water stop valve, filter and hose

3b. Confirm that the installation conditions are met for usage of the fixed water connection.

Important

- Ensure that the installation conditions are met before you install the fixed water connection. (see page 1)
- Always observe local regulation regarding plumbing!
- Water pressure allowed: Min. 0.8 bar dynamic pressure/ Max. 10 bar static pressure
- Make sure that the caution label indicating these pressure values is in clear sight after installation.

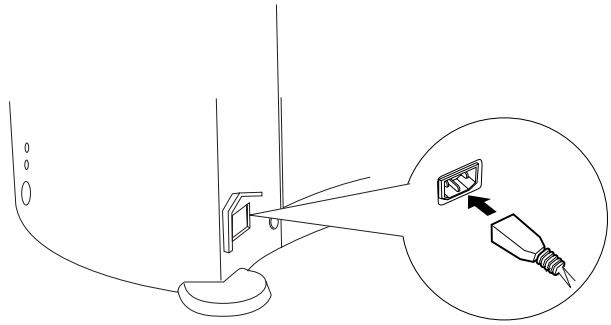
1. Connect the water stop valve to the faucet.
2. Connect the flexible water hose to the machine. (Do not forget to put the sealing ring in place!)
3. Flush the water filter. The necessity of this is depending on the type of filter used. Refer to the manufacturer instructions.
4. Connect the water filter inlet hose to the water stop valve.
5. Connect the flexible water hose to the water filter.
6. Open the faucet to fill the water filter and the hoses.
7. Loosen the connection between the flexible hose and the inlet valve a little to allow air to escape from the hose. Reconnect firmly afterwards.



Connect the power cord

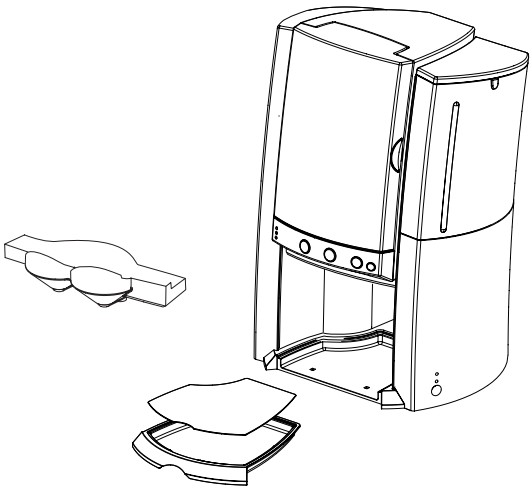
4. Connect the power cord.

The microprocessor will be initialized. This takes up to 30 seconds. During initialization all LED's light on.



Install drip tray, cup grille and trough

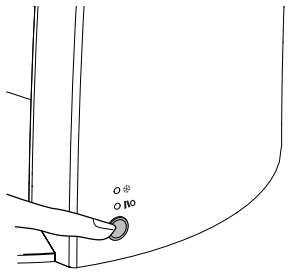
5. Install cup grille, drip tray and trough.



Switch on the machine

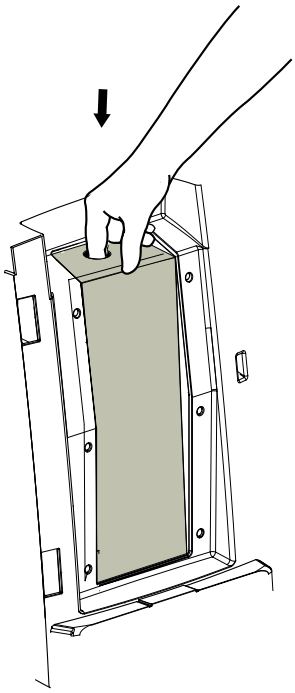
6. Press the on/stand-by button as illustrated to switch the machine on. The boiler is probably empty when the machine is switched on for the first time, the heating element remains therefore off until the boiler has been filled with water.

   The indicator LED 'Please wait, warming up' (boiler temperature low indication) lights on and will thereafter remain on until the operational temperature has been reached. This will take approx. 8 minutes for 220 V or up to 20 minutes for 110/120 V machines



Install coffee pack

7. Install the 1,25 l/42.3 fl oz coffee pack. (chilled)



- Check the expiration date.
- Shake the coffee pack at least 10 times.
- Verify that the coffee is completely thawed / properly chilled.
- Open pack and unfold dosing tube.
- Place the coffee pack in the cooling compartment and close the door.

Rinse water system

8. Dispense a sufficient amount of coffee and hot water to rinse the water system.
It is recommended to pour no less than 8 cups of hot water and 8 cups or 1 pot of coffee.

This step eliminates the possibility of 'off-taste' and ensures the best water quality.

In case the machine has been over a long period (6 months or more) :

(a) for coffee it is recommended to dispense 2 times a double pot from the machine after installation.
(b) for tea it is advisable to dispense once more 2 pots of hot water the next morning.

Program the machine

9. Calibrate the machine, set cup volumes and coffee strength. Programming can be done by means of buttons or the service device. (See also chapter 4 for additional information)

1. Entering the programming mode

• Push the stop and power button simulteanously for 3 seconds.

The LED's on the operation panel will flash 3 times to indicate that the programming mode has been entered. During the programming mode the power on LED will blink continuously.

2. Calibrate the machine

• First ensure the through is in place.
• Place a 0.5 litre/16.9 fl oz measuring cup under the coffee outlet
• Push the pot button and keep it pressed until 0.5 litre/1.9 fl oz is dispensed.
• Release the button.

The flow will be automatically calculated (cc/sec) based on the fixed quantity (0.5 litre/16.9 fl oz) and the time needed to dispense this amount.

3. Coffee cup volume setting

• Place a cup under the coffee outlet.
• Push the coffee cup button until the desired amount is dispensed in the cup.

4. Hot water cup volume setting

• Place a cup under the hot water outlet.
• Push the hot water cup button until the desired amount is dispensed in the cup.

5. Coffee pot volume setting

The volume of the coffee pot is set to 0,9 litre/33 oz and cannot be changed by means of the buttons. Connect the service device to set another volume (range: 20-999 ml/0.7-33 oz).

6. Coffee strength (ratio) setting

The standard coffee ratio is 1:22. This ratio can be adjusted to meet customer preferences.
Press the **stop** button and the **pot of coffee** button to check the actual ratio setting.

Count the number of times that the LED is actually blinking and add (in case the **Replace coffee pack** LED lights) or substract (in case the **Refill water tank** LED lights) this from the offset value (1:20) to calculate the actual ratio.

= 1 : 20

2x = 1 : 22
(coffee less strong)

2x = 1 : 18
(coffee stronger)

Adjusting the coffee strength

To increase coffee strength	keep the **stop** button pressed, while pressing the **cup of coffee** button the desired amount of times. Wait for the **Refill water tank** LED to light up when the button has been pressed and proceed.
To decrease the coffee strength	keep the **stop** button pressed, while pressing the **hot water** button the desired amount of times. Wait for the **Replace coffee pack** LED to light up when the button has been pressed and proceed.

7. Coffee pot ratio setting (service device only)

From software version 2.09 the coffee strength (ratio) of the coffee pot can be set/changed independently from the cup ratio. (range 5~99 / default 1:22)

8. Exit the programming mode

Pres the power button once to exit the programming mode.
The power LED stops blinking and lights on.

2.3 Handing over the dispenser to the customer

Ensure that the dispenser is working flawlessly once the machine has been installed and programmed according to the wishes of the customer.
Instruct the user(s) of the machine regarding the following items. Good understanding and commitment will contribute to the overall machine performance! Time spent on customer instruction is in this respect invaluable.

Customer instruction

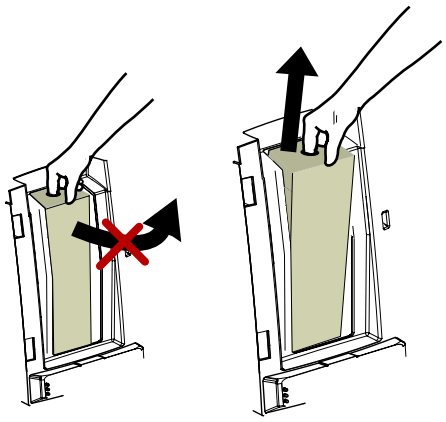
• Safety

The size and weight of the machine may invite the user to move the machine around. It is important to point out that **hot** water can flow out of the machine if it is severely tilted or shaken when it is being lifted or carried.
This risk can be avoided by waiting until the boiler inside the machine has cooled down.
(recommended waiting time mentioned in the user manual is 3 hours)

When a machine with fixed water connection is relocated the water hose contain air. When reconnected this air may enter the water system and cause malfunctions.

• Basic machine operation & ingredients
• HACCP, hygiene and product storage
• Cleaning procedure (and correct descaling procedure the water tank)
• Indicators and corrective actions
• Quick reference label
• Delivery of products (route-seller)

Incorrect pack removal may result in a snapped dosing tube and spilled coffee. Please instruct the customer.



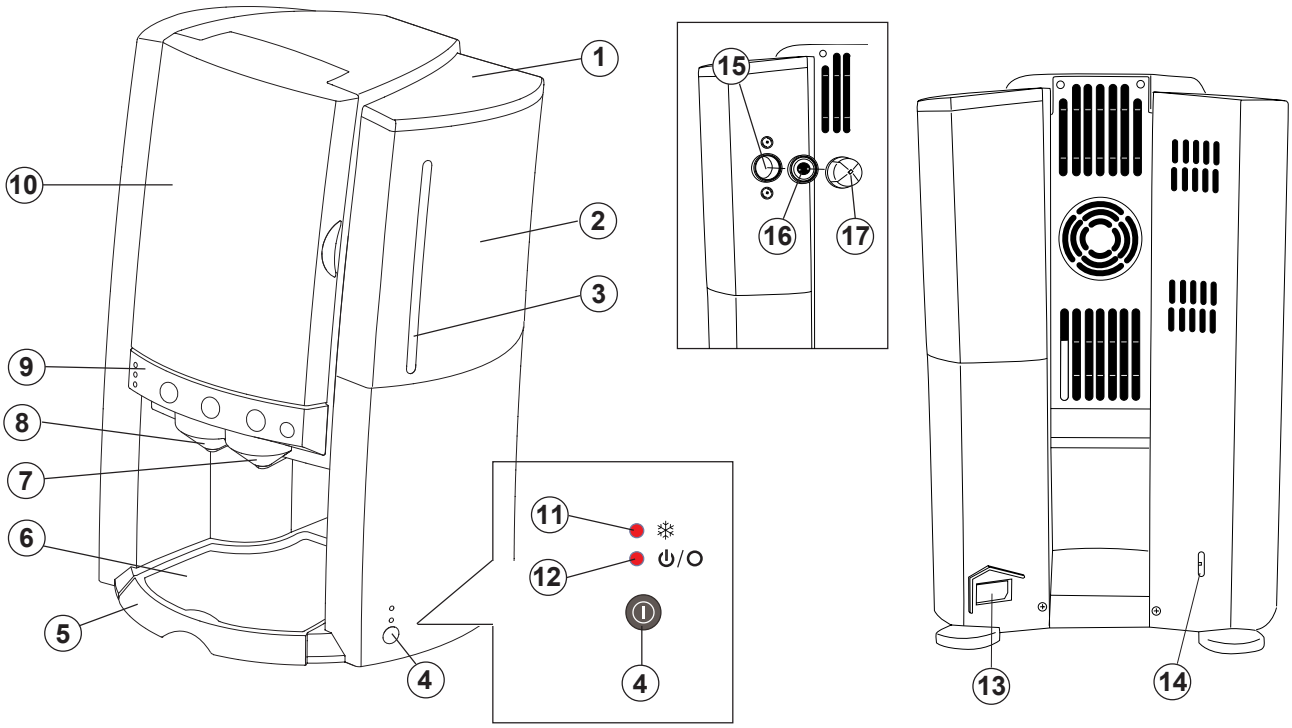
Do not pull
dosing tube may snap!

Tilt and lift
to remove

Materials to be handed over to the customer

• User manual
• Brush (for dosing coil cleaning)
• Additional Quick reference card (NSF version)

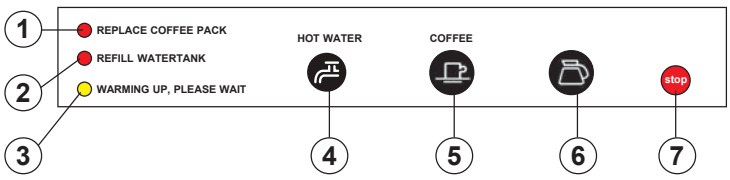
2.4 Dispenser description



1. Cold water tank lid
2. Cold water tank
3. Cold water level window
4. Main switch
5. Drip tray
6. Cup grille
7. Coffee outlet
8. Hot water outlet
9. Operation panel
10. Cooling compartment door
11. Cooling temperature high indication
12. Power on/stand-by indication
13. Power inlet
14. Opening for reset switch

Fixed water connection only

15. Water inlet valve
16. Flow restrictor
17. Sieve



1. Coffee pack empty indication
2. Cold water tank empty indication
3. Boiler temperature low indication
4. Hot water button (in dispenser up to the 3 series)
5. Coffee (cup) button
6. Coffee (pot) button
7. Stop button

2.5 Specifications

System	Chilled liquid concentrated coffee brewing
Capacity	1.25 litres / approx 42.3 fl oz

Average number of cups (125 ml / 4 oz) at various ratios (± 10%)

Ratio	No. of cups	Ratio	No. of cups	Ratio	No. of cups	Ratio	No. of cups
1:5	60	1:16	170	1:27	280	1:39	400
1:6	70	1:17	180	1:28	290	1:40	410
1:7	80	1:18	190	1:29	300	1:41	420
1:8	90	1:19	200	1:30	310	1:42	430
1:9	100	1:20	210	1:31	320	1:43	440
1:10	110	1:21	220	1:32	330	1:44	450
1:11	120	1:22	230	1:33	340	1:45	460
1:12	130	1:23	240	1:34	350	1:46	470
1:13	140	1:24	250	1:35	360	1:47	480
1:14	150	1:25	260	1:36	370	1:48	490
1:15	160	1:26	270	1:37	380	1:49	500
				1:38	390	1:50	510

Pack size		90 mm/3,5” (H) x 90 mm/3.5” (W) x 230 mm/9” (D)
Machine size		560 mm/22” (H) x 325 mm/12,8” (W) x 360 mm/14.2” (D)
Weight		12 Kg (max. 19.0 Kg)
Noise level		max. 40 dB(A) at 1 metre/3.3 ft (stand-by mode)
Power supply		85~240 V AC 50/60 Hz (Switch mode power supply)
Power consumption		Europe: max. 2100 W Japan: max. 1280 W USA: max. 1480 W
Environment	Temperature	between 1 °C and 32 °C / 34~90°F
	Humidity	up to 80 % RH
Cleaning time (user)		15 minutes per day
Machine lifetime		7 years
Cooling	System	Thermo-electrical (Peltier element with fan)
	Capacity	1,25 litres/42,3 BIB (bag-in-box)
	Temperature	3~5 °C/37.4~41°F
Boiler	System	Heating element (2100 W)
	Capacity	1,8 litres/60,8 fl oz
	Temperature	Adjustable between 83~96 °C / 181~205°F
Cold water supply		Water-container with a capacity of 3 litres/101.4 fl oz or a fixed water connection. (see also chapter 5A)
Dosing		B2 dosing coil
Accessories		Coffee pot (940 ml/31.8 fl oz)

User operation

Outlets		Coffee and hot water
Coffee	Cup volume	20-999 cc / 0.6-33 oz
	Time	8-10 sec. (125 ml / 4 oz)
	Pot volume	20-999 ml / 0.6-33 oz (factory setting = 900 ml/30.4 fl oz)
	Brewing Time	60 sec.
	Waiting time	230V : 120 sec. between two pots 120V : 188 sec. between two pots 110V : 228 sec. between two pots

Version 1.36
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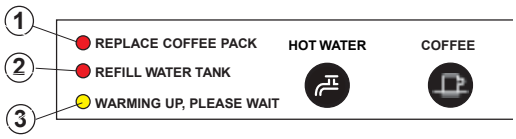
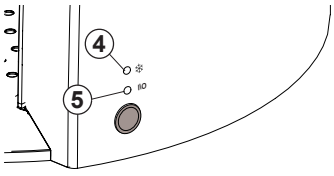
3.1 Indications

Machine status and errors are communicated by means of LED indicators (On/Off/Blinking). It is also possible to display the last error detected by connecting the service device. The following malfunctions may be displayed directly after the service device is connected. (See chapter 4 page 1 for connection of the service device)

Message	Condition	Measure
Heater switched on too long	The heater remained on for more than 840 seconds	Safety device in the element connector has been activated Check the heating element and relay
Boiler temp too high	The set boiler temperature is exceeded by more than 4°C/39°F	Check/replace the NTC sensor Check the relay
Boiler level low too long	Boiler low level detected for more than 25 sec or 120 sec after the dispenser is switched on (water tank is not empty).	Check/replace sieve, inlet valve and check if a tube is bent, squeezed or partly disconnected
Cooling temp too long high	Cooling compartment temperature exceeds 10°C/50°F for more than 3 hours	Check/replace the coffee pack, it may have been far too warm Check/replace the NTC sensor, Peltier element and cooling fan
Cooling temp too low	Cooling compartment temperature dropped under 1°C/34°F	Check/replace the coffee pack, it may still be frozen Check/replace the NTC sensor
Eeprom broken or not build in	Data cannot be retrieved (default settings will be used instead)	Check/replace Eeprom (see note on pages of section 5K)
Eeprom (re)programmed	Data cannot be retrieved immediately, but within 3 attempts (retry on error)	
Inlet valve too often open	More than 500 ml16.9 fl oz water was supplied in the stand-by mode	Check/replace the inlet valve
Bad dosing!!	B2 pulse < 6.6 ms or > 7.2 ms	Check/replace the coffee pack

Machine status/error indications





1. Coffee empty LED
2. Water tank empty LED
3. Boiler temperature low LED
4. Cooling temperature LED
5. Power LED

Remark concerning Water tank Empty LED : If the fixed water connection is installed this indicator does not refer to the water tank, but to an interrupted water supply to the boiler. It will blink in case of an malfunction.

1. Power LED

On — Machine is switched on.

Off — Power off, only the cooling control is operational.

Blinking
1. The machine is in the user programming mode
2. No 24 VDC circuit
3. The trough is not present
4. The safety circuit has been triggered. The machine will be switched off.
   Reset the machine by pressing the reset switch on the thermistor (overflow tube) located at the machine rear side. Press the on/stand-by button thereafter.
5. Error detected.

2. Boiler temperature low LED

On — Boiler temperature too low (Temperature less than 70 °C/158°F The LED switches off at T_{set}-4°C/39°F)

- It is possible to block the delivery at a low boiler temperature (<70 °C/158°F) by means of the service device (see also chapter 4.2)
- If the temperature becomes too low during delivery of a cup, the cycle is completed. A pot cycle will be interrupted until the correct boiler temperature has been reached. However, the cycle is completed if more than 74% of the set volume has already been dispensed.
- The boiler will not heat up if the trough is not present.

Off — Boiler temperature correct (normal status)

Blinking — Boiler related malfunction. The security relay will switch the machine off. (Cooling function remains operational)

1. The heater remains on for more than 15 min. and/or the temperature exceeds the T_{set} by 4°C/39°F.
2. More than 500 ml/16.9 fl oz water has been supplied in the stand-by mode. (the counter is reset when coffee or hot water is being dispensed)
   The Boiler temperature low LED and the Cold water empty LED will blink alternately. (The power LED is off)

3. Cooling LED

On — Cooling compartment temperature too high

The LED lights on when the cooling compartment temperature > 10°C/50°F and switches off when the temperature drops under 9°C/48°F.

Off — Correct cooling compartment temperature (normal status)

Blinking — Cooling compartment related malfunction.

The LED starts blinking in case the temperature drops under 1°C/34°F or remains higher than 10°C/50°F for more than 3 hours.

4. Cold water empty LED

On — The magneto-electrical sensor detects no water for longer than 1 second.
(if detected during dispensing: a cup cycle is ended, a pot cycle is interrupted)
This is not applicable if a fixed water connection is installed. (the sensor is not connected)

If the water tank is empty or the water supply is interrupted (in case of a fixed water connection) and the boiler is not filled, the heating element will be switched off to prevent overheating and the dosing is disabled to prevent bad dosing.

Off — Water is present inside the water tank / correct water supply to the boiler.

Blinking — The LED starts to blink when the boiler is not filled within 25 seconds (or 120 seconds after the machine has been switched on) **while the inlet valve is open**. In case a fixed water connection is present it indicates that the water supply is interrupted or shut off.

More than 500 ml/16.9 fl oz water has been supplied in the stand-by mode.
(the counter is reset when coffee or hot water is being dispensed)
The Boiler temperature low LED and the Cold water empty LED will blink alternately.
(The power LED is off)

5. Coffee empty LED

On — No coffee concentrate present

The presence of coffee concentrate (= filled BIB dosing tube) is detected by an IR transmitter/receiver in the dosing coil assembly. If no concentrate is detected the IR beam is not interrupted and the LED will light on. Coffee dosing is stopped 50 dosing pulses after the empty detection signal. (to dose the remaining 5 ml. in the tube)

Hot water remains to be delivered thereafter from the coffee outlet.

Off — Coffee concentrate present (normal status)

Disabling or aborting a delivery

Disabling or aborting a brewing/delivery cycle										
	Cup of coffee				Cup of hot water				Pot of coffee	
	Continuous flow		Portion controlled		Continuous flow		Portion controlled		(preset volume)	
	Start	Completed or aborted	Start	Completed or aborted	Start	Completed or aborted	Start	Completed or aborted	Start	Completed or aborted
Water supply interrupted	**No**	**Aborted**	**No**	**Completed**	**No**	**Aborted**	**No**	**Completed**	**No**	**Aborted**
Low temperature brewing/delivery enabled (boiler temperature = 70°C/158°F)	**Yes**	**Completed**	**Yes**	**Completed**	**Yes**	**Completed**	**Yes**	**Completed**	**Yes**	**Completed***
Low temperature brewing/delivery disabled	**No**	**Aborted**	**No**	**Completed**	**No**	**Aborted**	**No**	**Completed**	**No**	**Aborted**
Boiler not filled up	**No**	**x**	**No**	**x**	**No**	**x**	**No**	**x**	**No**	**x**
Coffee pack empty	**No**	**Aborted after 50 pulses**	**No**	**Aborted after 50 pulses**	**Yes**	**Completed**	**Yes**	**Completed**	**Yes**	**Aborted after 50 pulses**
Other errors (excluding cooling errors)	**No**	**Aborted**	**No**	**Aborted**	**No**	**Aborted**	**No**	**Aborted**	**No**	**Aborted**

*** Completed if more than 74% of the set quantity has already been delivered, otherwise the cycle is aborted**

Only coffee concentrate is poured when the cup/pot coffee selection button is pressed.			
	Cause	**Action**	**Ref.**
1.	Outlet valve malfunction (blocked)	Connect service device and test product valve. Check if water is flowing out of the trough. Replace valve if necessary	4-4 5A-6 / PL-3
2.	Outlet tube clogged, not connected to the nozzle or clogged nozzle	Remove left cover and check tubes and nozzle. This malfunction implicates that water is leaking at the left side of the machine.	PL-3
3.	Flat cable is damaged or disconnected	Check the flat cable (remove right cover) and replace cable (incl.operation PCB) if necessary.	5K3 / PL-6
4.	The valves are incorrectly connected.	Check the wiring and the connectors of the product valve(s).	5A-6 / PL-3
5.	Control PCB failure	If the machine pours only coffee concentrate without apparent reason, the control PCB may be defective. Check output voltages and replace if necessary	5K-6 5K-1 / PL-2

PL = Parts list (Section 10)

no hot water is poured when the hot water selection button is pressed.			
	Cause	**Action**	**Ref.**
1.	Outlet valve malfunction (blocked)	Connect service device and test product valve. Check if water is flowing out of the trough. Replace valve if necessary	4-4 5A-6 / PL-3
2.	Outlet tube clogged, not connected to the nozzle or clogged nozzle	Remove left cover and check tubes and nozzle. This malfunction implicates that water is leaking at the left side of the machine.	PL-3
3.	Flat cable is damaged or disconnected	Check the flat cable (remove right cover) and replace cable (incl.operation PCB) if necessary.	5K-3 / PL-6
4.	The valves are incorrectly connected.	Check the wiring and the connectors of the product valve.	5A6 / PL-3
5.	Control PCB failure	If the machine pours only coffee concentrate without apparent reason, the control PCB may be defective. Check output voltages and replace if necessary	5K-6 5K-1 / PL-2

Actual pot volume is far less than the preset 900 ml			
	Cause	**Action**	**Ref.**
1.	Water tank is empty before total volume was dispensed	See the table on page 3 and change setting if necessary. (LED will also light on)	
2.	The boiler temperature dropped during delivery	See the table on page 3 and change setting if necessary. (LED will also light on)	

Only half cups (portion control) or long time needed to fill a cup (cont. flow)			
	Cause	**Action**	**Ref.**
1.	Tube(s) of the inlet valve is/ are partially disconnected or squeezed when the left cover was closed	Open left cover and check the in/outlet tubes of the inlet valve. When partially disconnected leakage at the right machine side will also occur.	PL-3
2.	Outlet tube clogged, not connected to the nozzle or clogged nozzle	Remove left cover and check tubes and nozzle. This malfunction implicates that water is leaking at the left side of the machine.	5A-6 / PL-3

Only water is poured when the coffee button is pressed.			
	Cause	**Action**	**Ref.**
1.	Failing empty detection. (LED does not light up)	Coffee inside pack/dosing tube is clogged. Replace the pack	
		The circular opening in the base through which the dosing tube is guided is dirty. Clean if necessary.	
		The empty detection assembly is defective. Replace if necessary	5C-1 / PL-8
		Control PCB malfunction or the connector/wiring is loose. Check connections.	5K-6

Irregular / Faulty Coffee strength			
	Cause	**Action**	**Ref.**
1.	Outlet valve malfunction (blocked)	Connect service device and test product valve. Check if water is flowing out of the trough. Replace valve if necessary	4-4 5A-6 / PL-3
2.	Boiler not filled quickly enough	Water supply is irregular due to scaling of inlet valve, scale inside hoses or clogged sieve. Check dispensed water volume and check/replace valve/hoses.	5A-7 / 5A-8
3.	Tube between inlet valve and boilers queezed	Open left cover and check/correct. Always close left cover carefully in order not to squeeze/disconnect tube.	
4.	Irregular coffee concentrate dosing	The coffee pack is not well defrosted. Defrost. The concentrate quality is affected. (old) Check expiry date, replace coffee pack if necessary. Coffee pack is not shaken before use. Shake pack well.	
5.	Inlet valve not calibrated	Calibrate the inlet valve	5A-3

Water leakage - rear side of the dispense area (drip tray)			
	Cause	**Action**	**Ref.**
1.	Water from the inner cover flows into the drip tray.	Water is leaking from the inlet assembly, water tank or inlet valve (fixed water connection) and flows into the inner cover. Check/replace defective/won parts. Check the opening in the upper rear corner of the dispense area for traces of scale.	5A-7 / 5A-8 PL-2

Water leakage - Machine right side.			
	Cause	**Action**	**Ref.**
1.	Water tank is damaged (cracked) or the tank valve leaks.	Check and replace if necessary. Water leakage will not be confined to the right side only.	5A-8 PL-9 / PL-10
2.	Condensation in cooling compartment	Condensated water is partly guided by the frame (bridge) through the wiring opening to the right side and reaches the machine base behind the main switch. Check cooling compartment door and sealing.	5F-5 PL-6 / PL-7

Water leakage - Machine front side.			
	Cause	**Action**	**Ref.**
1.	Excessive condensation in cooling compartment. (cold coffee pack)	Check if the cooling compartment door is properly closing. Correct and/or replace worn/defective parts.	5F-5 PL-6 / PL-7

Water remains dripping out of the trough			
	Cause	**Action**	**Ref.**
1.	Product valve leaks. (does not close due to scale deposit)	Check and replace the valve(s).	5A-6 / PL-3

Water leakage - Machine left side.			
	Cause	**Action**	**Ref.**
1.	Inlet valve scaled	Inlet valve does not close properly due to scale and the boiler overflows. Check replace inlet valve. Check also the water hose for scale when the inlet valve is replaced, as this scale may cause instant reoccurrence.	5A-7 / 5A-8 PL-3 / PL-10
2.	Tube between inlet valve and boilers queezed	Open left cover and check/correct. Always close left cover carefully in order not to squeeze/disconnect tube.	
3.	Machine has overboiled or hot water has entered the overflow tube	Reset the machine. Unplug the power cord when before touching the reset switch.	
4.	Damaged boiler	Check inlet of drain hose / inlet hose for small cracks. Check connection between upper/lower part (welded). Check front boiler leg for presence of cracks. Replace boiler if necessary.	5A-1 / PL-4
5.	Water level probe fault (overflow)	Check probe and its connections. Check if the GND is connected. Check boiler connector (24VDC) Connect if necessary. Heating element wiring not connected : no GND for level probe pulse. Connect if necessary.	5A-5 5A-1(Illustr.) PL-4
6.	Boiler lid sealing not well	Condensated water leaks through the sealing. Check the isolation at the side of the boiler opposite of the frame for traces of water/scale.	5A-5 / PL-4
7.	Outlet valves not correctly installed	Check / Correct.	
8.	Outlet tubes not connected to nozzle	Check / Connect.	
9.	Boiler overflow (failing level detection due to poor power board GND connection	Measure restistance between black (GND) wire of the power board connector and the black (GND) at the back side of the board. **If > 0 Ohm, replace power PCB.** **If 0 Ohm**, check Resistance between one of the black (GND) wires and the lead (GND) in the middle of the heating element plug. If >0 Ohm check connections/wiring	SI038

Cooling errors			
	Cause	**Action**	**Ref.**
1.	Peltier element defective	Measure current of the element (3A at 11V). Replace if defective	5F-1 / PL-5
2.	Cooling fan defective	Check the input voltage (CN7-2) and fan connectors Rear side of the machine.	5F-1 / PL-5
3.	Heat sink dirty	Clean the heat sink and remove the cause of excessive dust. Check also the ventilation space.	5F-2 / PL-5
4.	Temperature sensor error	Check the sensor at an ambient (room) temperature. (20-25°C/68-77°F = 6250-5000 Ohm) and replace if necessary.	5F-2 / PL-5
5.	Wiring / control PCB defective	Check the wiring/connectors. Check the 11V circuit (measuring point). Replace control PCB if necessary.	5K-5 5K-1 / PL-2
6.	Poor contact / conduction between cooling box, Peltier element and heat sink	Check the torque (if the required tools are available) and apply conductive paste to the Peltier element.	5F-2 / PL-5

Power on/Stand-by switch does not function (cooling is on)			
	Cause	**Action**	**Ref.**
1.	Incorrect connection of the wiring (flat cable) to the On/stand-by switch	Check if the cooling fan is working. If working then, Connect the flat cable of the switch with the black line up (facing you) If the fan is not working, a power failure is occurring. (see below)	

Machine does not function (Power LED / cooling fan on)			
	Cause	**Action**	**Ref.**
1.	Wiring or connectors disconnected.	Remove right cover and check the connectors of the control PCB. Correct if necessary.	5K1
2.	The operation unit PCB is defective, the flat cable of the PCB is damaged or not correctly connected.	Check the LED's (service device) and check the flat cable.	4-4 5K-3
3.	Control PCB error	Replace the control PCB if there is no machine function without apparent reason.	5K-1 PL-2

Machine does not function (Power LED is blinking)			
	Cause	**Action**	**Ref.**
1.	Safety circuit is activated	The overboil protection (clixon) has been actuated. Switch the machine to stand-by, unplug the power cord, press the safety switch and switch the machine back on.	
		The trough is not detected. Check presence of trough and if necessary the reed sensor.	5D
		More than 0,5 litre 16.9 fl oz water has been supplied while the machine was idle. Check if water is dripping from the trough. Replace the worn/defective valve	5A-6 / PL-3

Machine does not function (Power LED off / no cooling fan operation)			
	Cause	**Action**	**Ref.**
1.	Power failure	Check wall outlet for power, power cord, power supply PCB and the fuse on the PCB.	

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4. Programming mode

A variety of settings can be changed or viewed by means of (**1**) the standard DECS service device or by means of (**2**) the operation panel buttons.

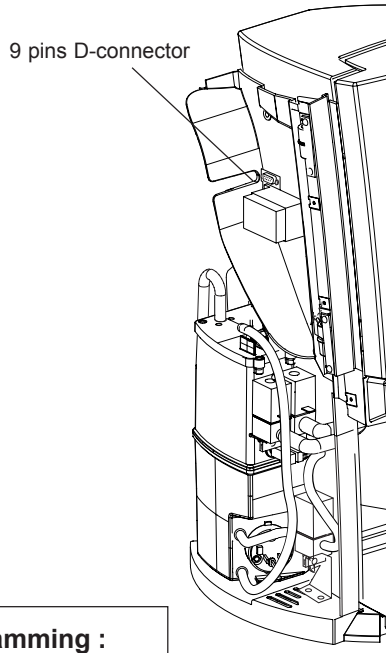
4.1 Programming by means of the service device.

Procedure

1. Switch the dispenser to stand-by.
2. Remove the left machine cover.
3. Plug the service device into the 9 pins D-connector. (standard service device connector)
4. Switch the service device on.
5. Switch the machine on.

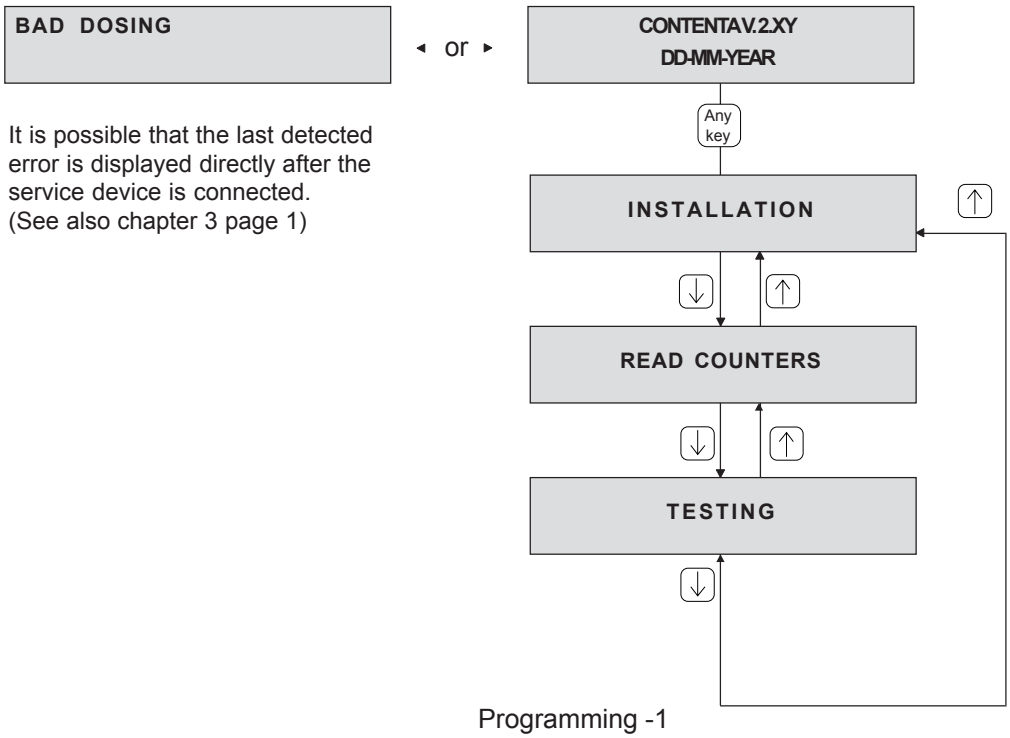
   The programming mode is now enabled. Scroll through the main programming menu with the up/down keys and press [input] to enter a sub-menu to change any settings. (**remark**: the time-out is 5 minutes)

6. Switch the dispenser to stand-byafter programming.
7. Disconnect the service device (switch it off) and reinstall the machine cover.
8. Switch the machine on.



Should the machine become locked up during programming : unplug the service device for about 30 seconds and retry.
However, if a microprocessor is exchanged (for upgrading, etc.) all LED's will light on when the machine is switched back on. During this period the new microprocessor is initialised

A. Programming mode structure



It is possible that the last detected error is displayed directly after the service device is connected.
(See also chapter 3 page 1)

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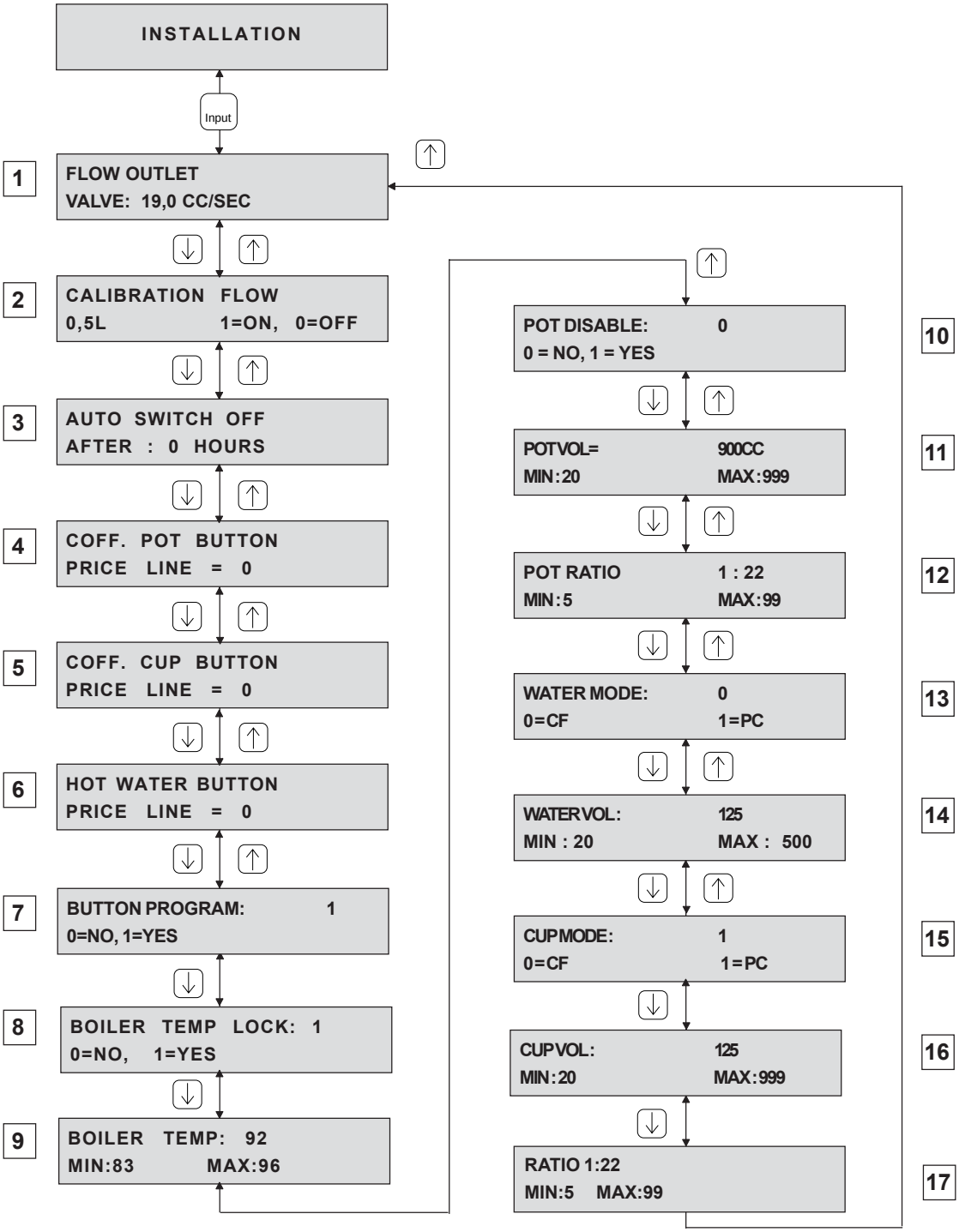
B. Installation sub-menu

Enter the installation sub-menu to change or view machine settings. You can scroll through the various items with the ↓ ↑ keys and select an item with the Input key. Press Input also to return to the main programming menu.

How to change a setting

1. Select the item with the CLR key. (Question marks will appear)
2. Enter the desired value and store the value by pressing the input key or any arrow.

Installation sub-menu structure (presettings are sample)



See next page for the remarks concerning the installation sub-menu

Remarks installation sub-menu

1. The waterflow of the outlet valves.

2. Calibrate the coffee valve after installation of a new boiler/valve and installation.
   See chapter 5A for boiler replacement.

3. Default auto switch-off time is 4 hours.

4. Selection of price line 0, 1 or 2 for optional payment systems.

5. Selection of price line 0, 1 or 2 for optional payment systems.

6. Selection of price line 0, 1 or 2 for optional payment systems.

7. Enable/disable button programming (the pot volume setting must be done by service device).

8. When set to [1] it is not possible to dispense hot water or coffee after the boiler temperature has dropped under 70°C/158°F (Condition =T_{set}-3°C/-5.4°F).
   When set to [0] this limitation has been disabled.

9. The boiler temperature can be set between 83-96°C/181-205°F. It may be possible that the boiler LED starts blinking when the temperature is decreased 4°C/7.2°F or more. (boiler temperature high fault). Switch the machine off for a while when this occurs.

10. Enable/disable the pot function.

11. Pot volume in ml. The coffe pot is always portion controlled. The customer has to press the stop button when less than 0.9 litre/30.4 floz. is needed. It is of course possible to set any given volume between 2 20 ml and 999 ml by means of the service device.

12. Coffee strength setting for the pot (version 2.09 and higher).

13. Select [Portion control] or [Continous flow] for the hot water button according to the customer wish. The default setting is [Continous flow].

14. Cup volume hot water in ml.

15. Select [Portion control] or [Continous flow] for the coffee button (cup) according to the customer wish.

16. Cup volume coffee in ml.

17. Coffee strength setting. See also page 7 of this chapter for more information about the ratio.

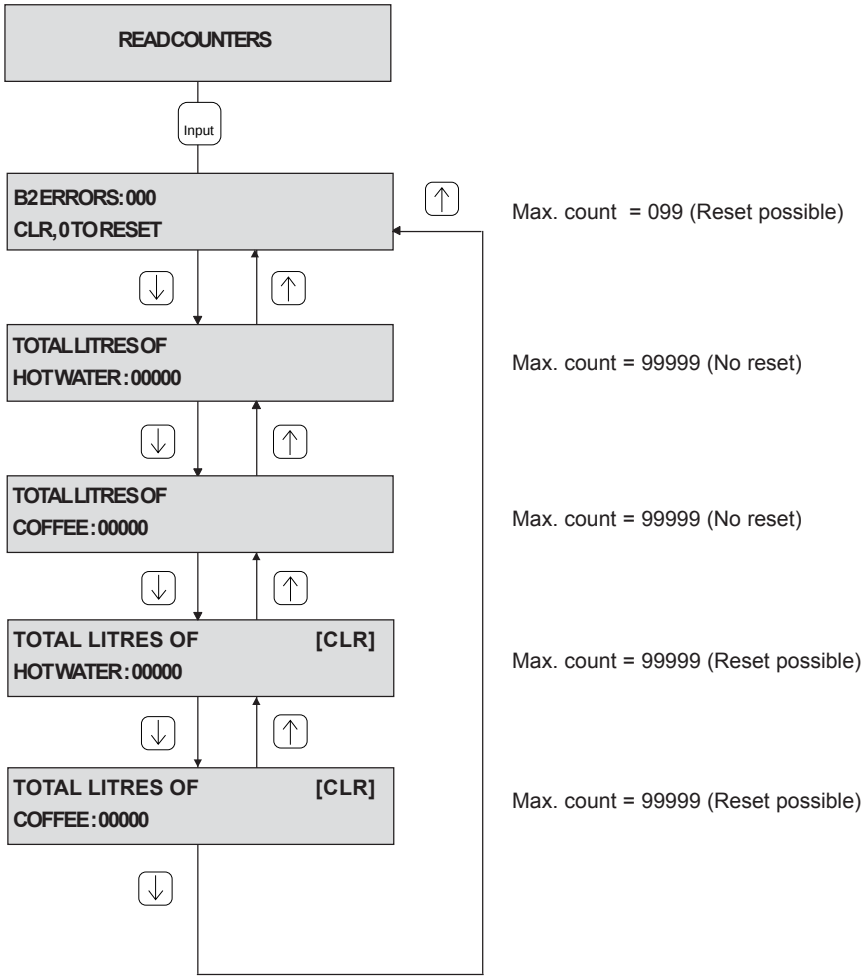
C. Read Counters sub-menu

Enter the Read Counters sub-menu to view the mentioned machine counters. you can scroll through the various items with the up/down keys. It is only possible to reset the B2 error counter. Select the counter with the Input key and press 0 followed by the Input key. Press Input to return to the main programming menu.

> **B2 errors** are generated when the dosing pulse current of 5,2 A is not reached within 7.2 ms or if the pulse is shorter than 6.6 ms. (normal time is 6.8 ms.) If one or more B2 errors occur during 1 delivery cycle the counter value is increased by 1.
> The max.counter value is 99. (counter continues with '0' thereafter)

All settings different from the default settings are stored in an EEPROM on the control board. (D1010) Should replacement of the control board become necessary, the EEPROM can simply be reinstalled onto the new control board and all machine settings and counters are restored. (Keep the EEPROM therefore with the machine)

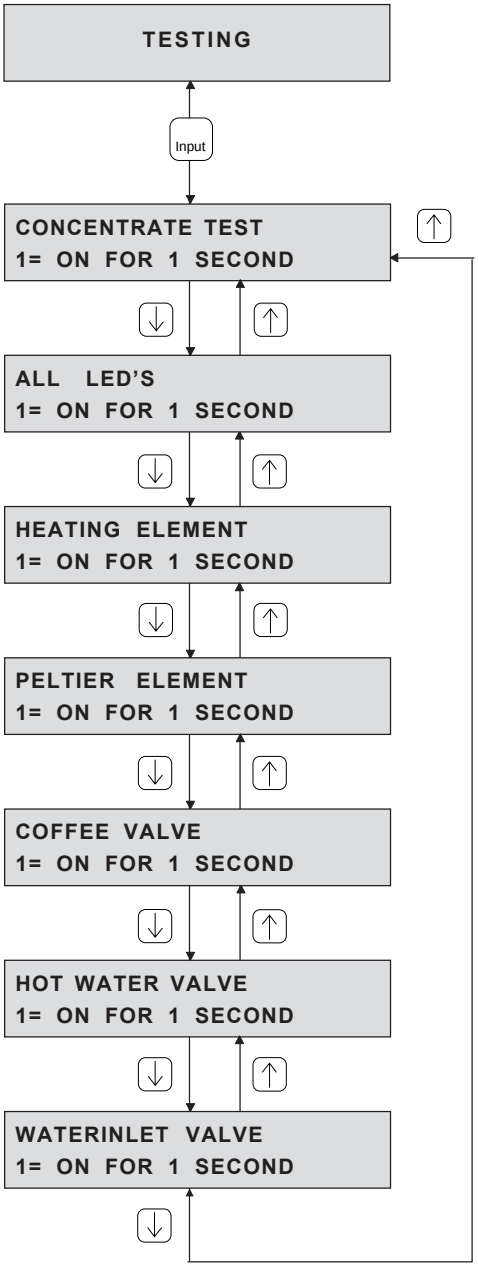
Read counters sub-menu structure



D. Testing sub-menu

Enter the installation sub-menu to test functions and components. You can scroll through the various items with the up/down keys and activate a machine part or function with the [1] key. The part/function can then be noticed or the function related in/output voltages can be measured.

Testing sub-menu structure



B2 Coil Dosing test. The dosing pump of the coffee pack action should be clearly audible.
Place a cup under the coffee outlet and clean the trough afterwards.

LED test. Verify that every LED is properly functioning.

Heating element/relay test. When actuated the relay will produce an audible 'click'.

Peltier test. Measure the in/output voltages over the related pins/connectors. (When the Peltier element is activated, a change of fan operation is audible) The Peltier element will switch off for 3 seconds after it has been activated.

Valve test. The rear outlet valve (coffee) should open for 1 second. Place a cup under the coffee outlet.

Valve test. The front outlet valve (hot water) should open for 1 second. Place a cup under the hot water outlet.

Valve test. The water inlet valve should open for 1 second. When actuated the valve will produce an audible 'click'.

⚠ **It is possible that too much water flows into the boiler due to repeated inlet valve testing. This may result in overflowing! Allow time to reset.**

4.2 Programming the machine by means of the operation panel buttons

Some basic delivery functions can be programmed by means of the operation panel buttons and the main power button without the need of a service device. It is possible to start programming even when the boiler water temperature is low to save time. **Coffee pack and outlet trough must be present**.
The following functions can be programmed:

- Cup volume hot water
- Cup volume coffee
- Coffee strength (ratio)

A. To enter the programming mode:

Press and hold the **stop** and the **power** button for 3 seconds.

The operation panel LED indicators and the power will light up 3 times to indicate that the programming mode is activated. The power LED will blink as long as the programming mode is active.

To cancel the programming mode:

Press the **power** button. The power LED stops blinking and the machine is ready for delivery.
The mode will be automatically canceled if no button is pressed for 5 minutes. (time-out)

B. Coffee cup volume setting

- Place a cup under the coffee outlet.
- Push the coffee cup button until the desired amount is dispensed in the cup.
- Release the button.

Note that when you release the button the outlet valve closes, some extra water will flow into the cup from the trough.
This quantity is directly stored in memory. Repeat this sequence if necessary.

C. Hot water cup volume setting

- Place a cup under the hot water outlet.
- Push the hot water cup button until the desired amount is dispensed in the cup.
- Release the button.

Note that when you release the button the outlet valve closes, some extra water will flow into the cup from the trough.
This quantity is directly stored in memory. Repeat this sequence if necessary.

D. Coffee pot volume setting

The volume of the coffee pot is default 0.9 litre/30.4 fl oz and can **only** be adjusted with the service device.

E. Calibration (coffee) valve flow

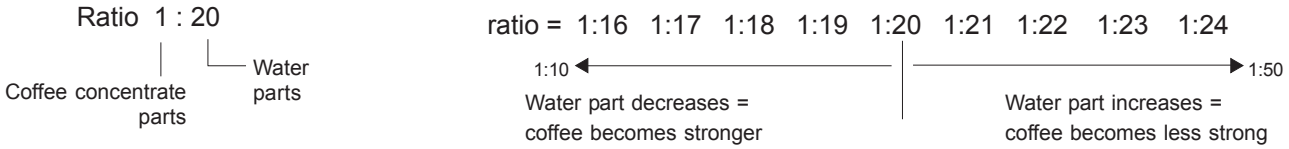
- Place a 0.5 litre/16.9 fl oz measuring cup under the coffee outlet
- Push the pot button and keep it pressed until 0.5 litre/16.9 fl oz is dispensed.
- Release the button.

The flow will be automatically calculated (cc/sec) based on the fixed quantity (0.5 litre/16.9 fl oz) and the time that was needed to dispense this amount.

F. Coffee ratio setting

The coffee strength is determined by the mix of coffee concentrate and water. This mix is formulated as a ratio of 1 (volume) part of coffee versus a given number of water parts. (e.g. : ratio 1:20 indicates that the coffee itself is composed of 1 part coffee concentrate and 20 parts of water.)
When the coffee is made stronger the number of pulses needed to produce a certain coffee strength is increased. First the machine calculates the time during which coffee can be dosed (based on the parameters of valve flow and cup volume) and thereafter the actual number of pulses.

This implies that the coffee becomes stronger when the relative number of water parts decreases. Ratio 1:19 produces therefore **stronger** coffee than ratio 1:20.


Ratio 1 : 20
Coffee concentrate parts
Water parts
ratio = 1:16 1:17 1:18 1:19 1:20 1:21 1:22 1:23 1:24
1:10
1:50
Water part decreases = coffee becomes stronger
Water part increases = coffee becomes less strong

> Checking the current ratio

Push the **stop button** and the **pot of coffee** to check the ratio setting.

If the **Replace coffee pack** and **Refill water tank [Check water supply]** LED's on the operation panel light up simultaneously, the dispenser is set to the default setting (1:20).

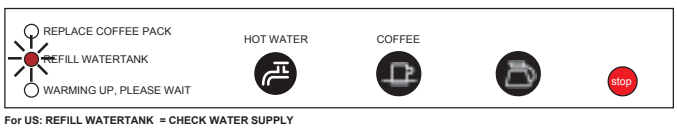
The coffee is stronger than default when the **Refill water tank [Check water supply]** LED of the operation panel is blinking and the coffee is less strong when the **Replace coffee pack** LED is blinking.

Count the number of times that the LED is actually blinking and add (in case of the **Replace coffee pack** LED) or substract (in case of the **Refill water tank [Check water supply]** LED) this from the default value (1:20) to determine the actual ratio.

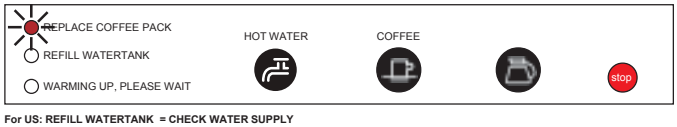
E.g., if the **Refill watertank [Check water supply]** LED blinks 3 times (coffee is stronger), substract 3 from 20 to obtain the ratio value. (=1:17)

> Adjusting the coffee strength

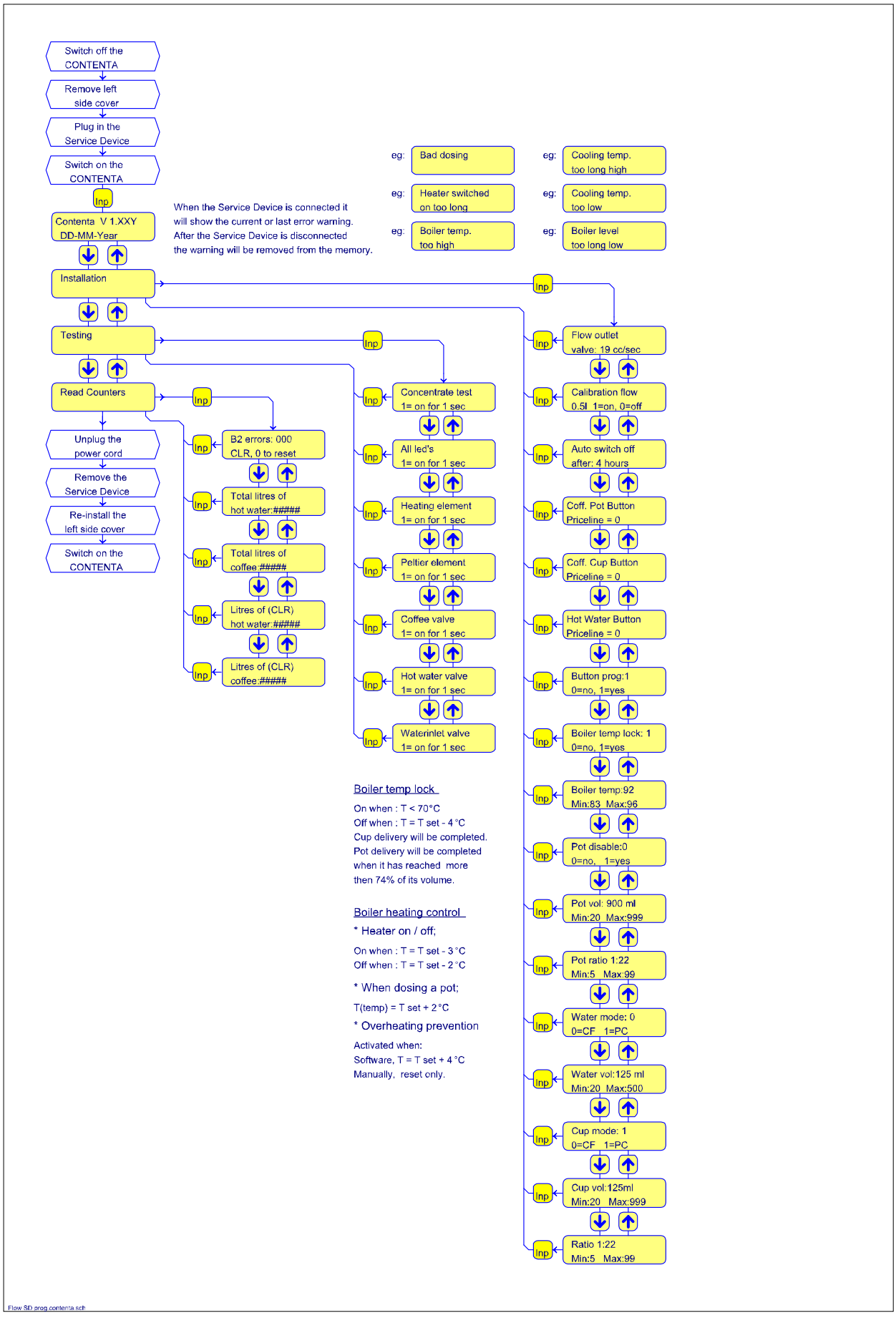
To increase coffee strength: keep the **stop** button pressed, press the **cup of coffee** button, wait for the **Refill watertank [Check water supply]** LED to light up and proceed.



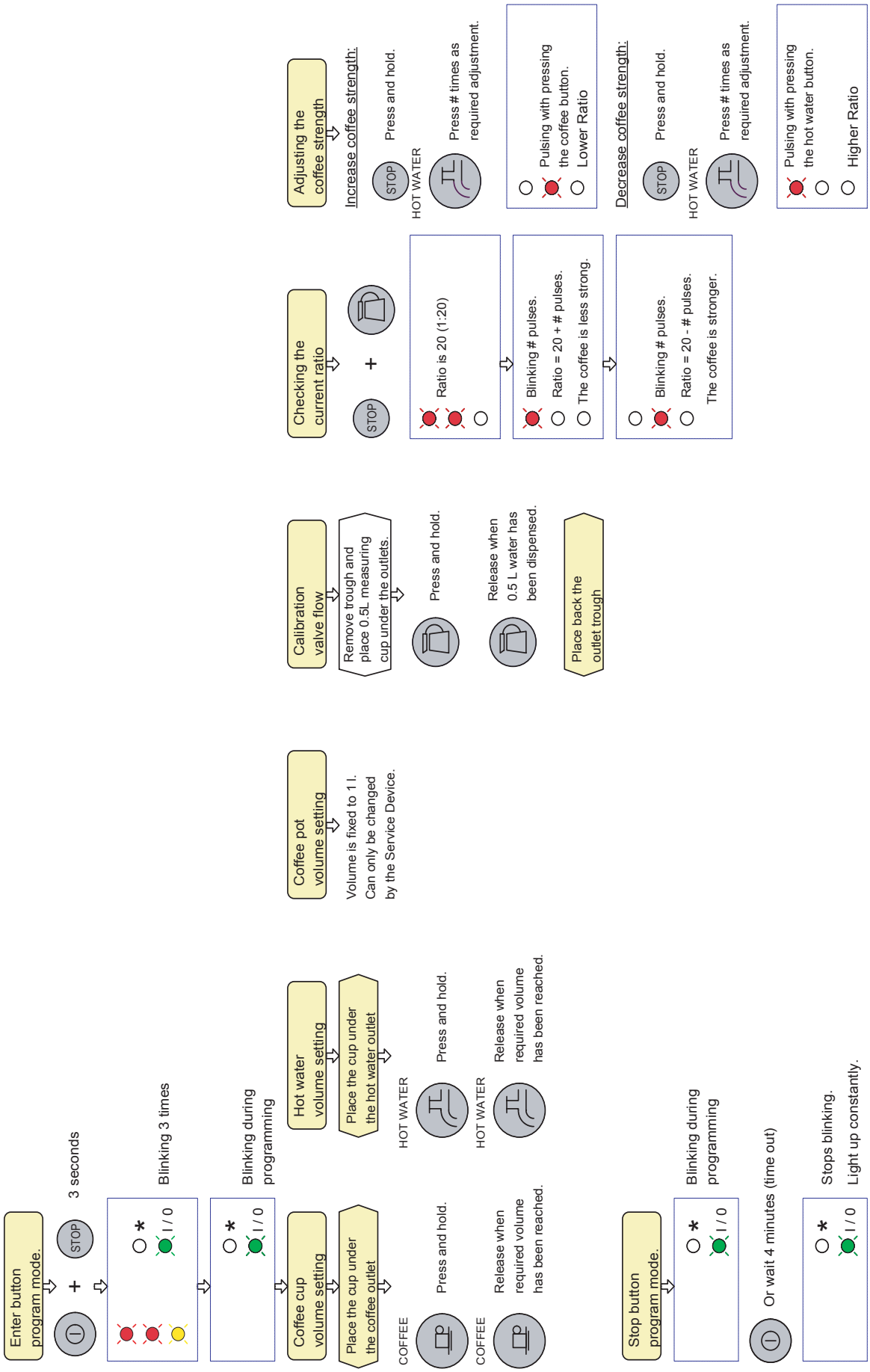
To decrease coffee strength: keep the **stop** button pressed, and press the **hot water** button, wait for the **Replace coffee pack** LED to light up and proceed.



4.3 Programming flow chart (service device)


Switch off the CONTENTA
Remove left side cover
Plug in the Service Device
Switch on the CONTENTA
Inp
Contenta V 1.XXY DD-MM-Year
When the Service Device is connected it will show the current or last error warning. After the Service Device is disconnected the warning will be removed from the memory.
eg: Bad dosing
eg: Heater switched on too long
eg: Boiler temp. too high
eg: Cooling temp. too long high
eg: Cooling temp. too low
eg: Boiler level too long low
Installation
Testing
Read Counters
Unplug the power cord
Remove the Service Device
Re-install the left side cover
Switch on the CONTENTA
B2 errors: 000 CLR, 0 to reset
Total litres of hot water:#####
Total litres of coffee:#####
Litres of (CLR) hot water:#####
Litres of (CLR) coffee:#####
Concentrate test 1= on for 1 sec
All led's 1= on for 1 sec
Heating element 1= on for 1 sec
Peltier element 1= on for 1 sec
Coffee valve 1= on for 1 sec
Hot water valve 1= on for 1 sec
Waterinlet valve 1= on for 1 sec
Flow outlet valve: 19 cc/sec
Calibration flow 0.5l 1=on, 0=off
Auto switch off after: 4 hours
Coff. Pot Button Priceline = 0
Coff. Cup Button Priceline = 0
Hot Water Button Priceline = 0
Button prog:1 0=no, 1=yes
Boiler temp lock: 1 0=no, 1=yes
Boiler temp:92 Min:83 Max:96
Pot disable:0 0=no, 1=yes
Pot vol: 900 ml Min:20 Max:999
Pot ratio 1:22 Min:5 Max:99
Water mode: 0 0=CF 1=PC
Water vol:125 ml Min:20 Max:500
Cup mode: 1 0=CF 1=PC
Cup vol:125ml Min:20 Max:999
Ratio 1:22 Min:5 Max:99
Boiler temp lock
On when : T < 70°C
Off when : T = T set - 4 °C
Cup delivery will be completed.
Pot delivery will be completed when it has reached more then 74% of its volume.
Boiler heating control
* Heater on / off;
On when : T = T set - 3 °C
Off when : T = T set - 2 °C
* When dosing a pot;
T(temp) = T set + 2 °C
* Overheating prevention
Activated when:
Software, T = T set + 4 °C
Manually, reset only.
Flow SD prog.contenta.sch

4.4 Programming flow chart (button programming)


Enter button program mode.
3 seconds
STOP
Blinking 3 times
Blinking during programming
Coffee cup volume setting
Place the cup under the coffee outlet
COFFEE
Press and hold.
Release when required volume has been reached.
Hot water volume setting
Place the cup under the hot water outlet
HOT WATER
Coffee pot volume setting
Volume is fixed to 1 l. Can only be changed by the Service Device.
Calibration valve flow
Remove trough and place 0.5L measuring cup under the outlets.
Release when 0.5 L water has been dispensed.
Place back the outlet trough
Checking the current ratio
Ratio is 20 (1:20)
Blinking # pulses.
Ratio = 20 + # pulses.
The coffee is less strong.
Ratio = 20 - # pulses.
The coffee is stronger.
Adjusting the coffee strength
Increase coffee strength:
Press # times as required adjustment.
Pulsing with pressing the coffee button.
Lower Ratio
Decrease coffee strength:
Pulsing with pressing the hot water button.
Higher Ratio
Stop button program mode.
Or wait 4 minutes (time out)
Stops blinking.
Light up constantly.

4.5 Default settings (V2.09/2.10)

Item	Minimum	Maximum	Steps	Default
Water flow rate (ml/sec)	12.0	25.0	0.1	19.0
Ratio (Coffee - cup)	5	99	1	22
Ratio (Coffee - pot)	5	99	1	22
Boiler temperature (°C)	83	96	1	92
Boiler temperature lock	Off	On		On
Peltier too high error (°C)				10.00
Peltier too low error (°C)				1.00
Peltier temperature (°C)	3.00	4.50		
Cup volume (ml)	20	999	1	125
Cup control (PC/CF*)	PC	CF		PC
Cup price line	0	2	1	0
Pot volume (ml)	20	999	1	900
Pot disabled (Off=pot enabled)	Off	On		Off
Pot price line	0	2	1	0
Hot water volume (ml)	20	500	1	125
Hot water control (PC/CF*)	PC	CF		CF
Hot water price line	0	2	1	0
Auto switch off (in hours)	0	9		4
Button programming (by user)	Off	On		On

Remarks :
***PC = portion control / CF = Continuous flow**
The service device utilizes metric units of measurement.

Conversions

Volume : [ml] divided by 29.57 = [fl oz]

e.g. 125 ml : 125 / 29.57 = 4.227fl oz.

Temperature : [°C] multiplied by 9 divided by 5 + 32 = [°F]

e.g. 92 °C : 92x9/5+32 = 197.6 °F

5A Water system

1. Disassembly and Adjustments

A. Boiler replacement

1. Unplug the power cord of the machine.
2. Empty the boiler:

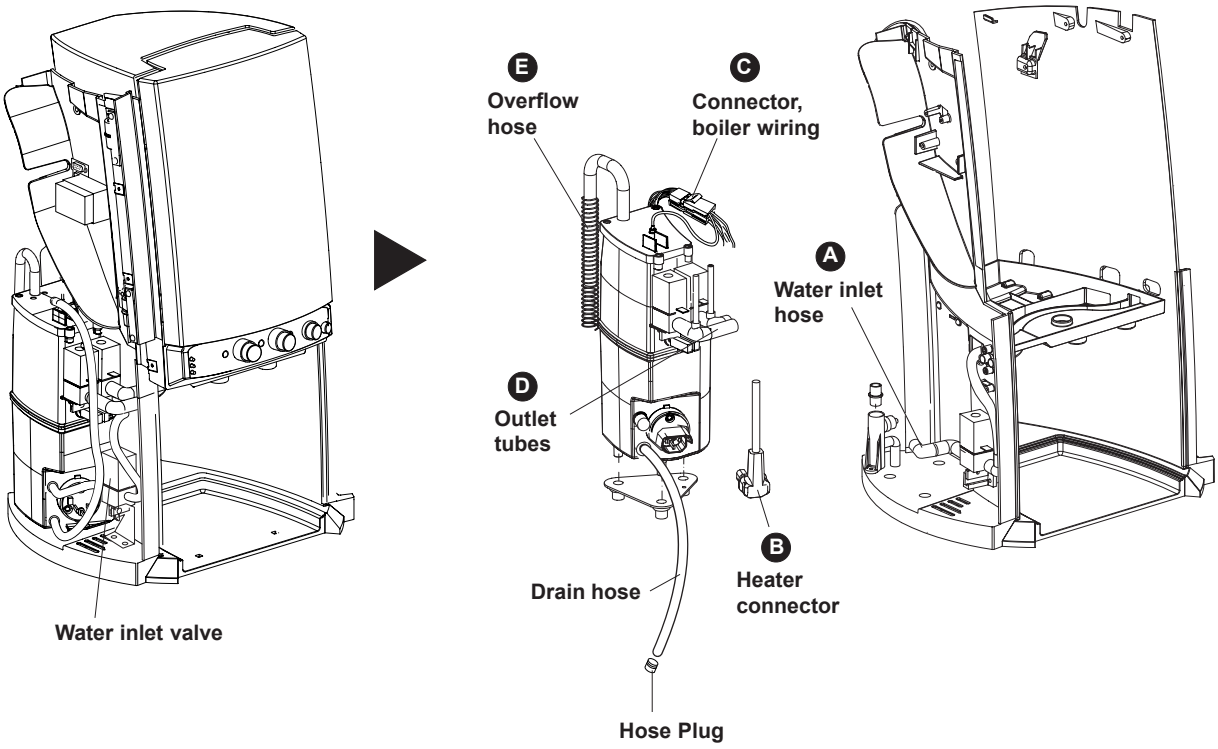
   • Remove the left cover, take the drain hose and hold the end of the hose above the boiler.
   • Remove the plug of the drain hose.
   • Squeeze the hose to prevent that water flows out of the hose.
   • Lower the end of the hose above a suitable container (boiler volume is 1,8 litres/60.9 fl oz).

   (Warning: boiler can contain very hot water)

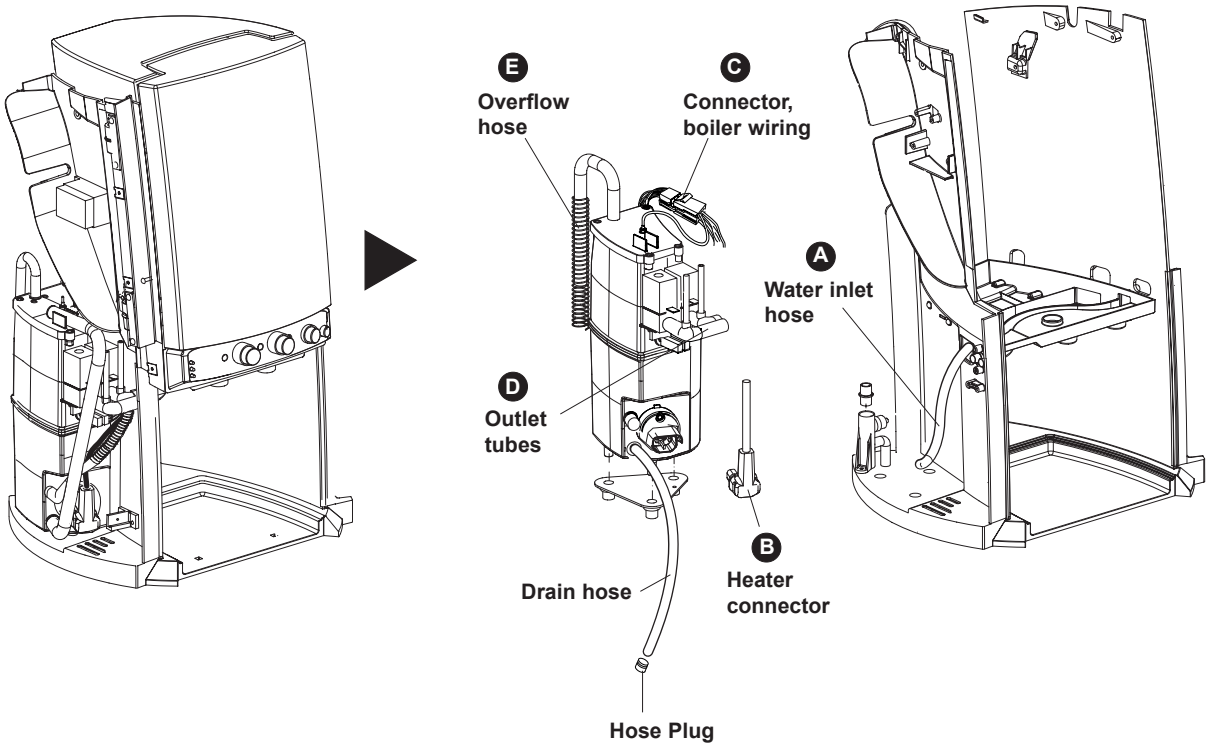
   • Hold the hose in position until the boiler is completely empty.
   • Put the plug back onto the hose.

3. Disconnect the water inlet hose (A), the connector of the heating element (B) and the connector of the boiler wiring (C), the outlet tubes (D) and the overflow hose (E).

   • Allow the water in the water inlet hose to flow out into a container. Use a cloth to wipe off any spilled water.



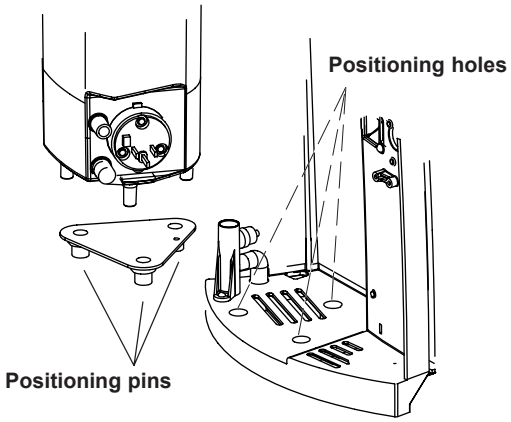
Boiler disassembly
(standard machine with removable water tank)



Boiler disassembly
(machine with fixed water connection)

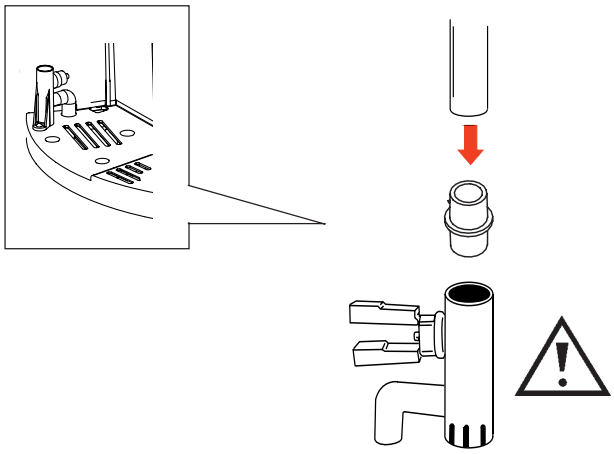
4. Lift the boiler out of the machine (tilt the boiler a little towards you and lift it out).

5. Take the replacement boiler and place the positioning pins under the boiler in the corresponding holes in the machine frame.



6. Connect the water outlet tubes to outlet spout on the machine frame. Make sure that the tubes are correctly installed.

7. Connect the overboil hose to the tube.



8. Reinstall the water inlet hose, the heating element connector and the **boiler wiring connector**.

9. Put the drain hose back in place and reinstall the left cover.

10. Calibrate the coffee valve. This can be done by means of button programming or the service device (in case of the latter please do so before step 9).

    Enter the button programming mode. Place a measuring cup under the coffee outlet.
    Press the coffee pot button and keep it pressed until 0,5 litre/60.9 fl oz has
    been dispensed. The dispenser will calculate the flow of the valve.
    Cancel the programming mode.
    In case of the service device you will find the calibration in the installation sub-menu.
    Press [1] to dispense 0,5 litre/60.9 fl oz and press [0] to stop.

B. Boiler temperature adjustment

See chapter 4 page 2 (Programming - Installation sub-menu).

C. Heating element replacement

The heating element is part of the boiler assembly. It cannot be replaced as a separate item in the field. Rather than disassembling the heating element separately the boiler is replaced as a single assembly (See boiler replacement on page 1).
The dry running safety device is integrated in the heating element connector.
It consists of two components:

(1) A bi-metal plate that switches the heating element off when the temperature becomes too high.
(2) A plastic pin that will melt to disconnect the power supply to the heating element in case the bi-metal does not function properly. (back-up safety)

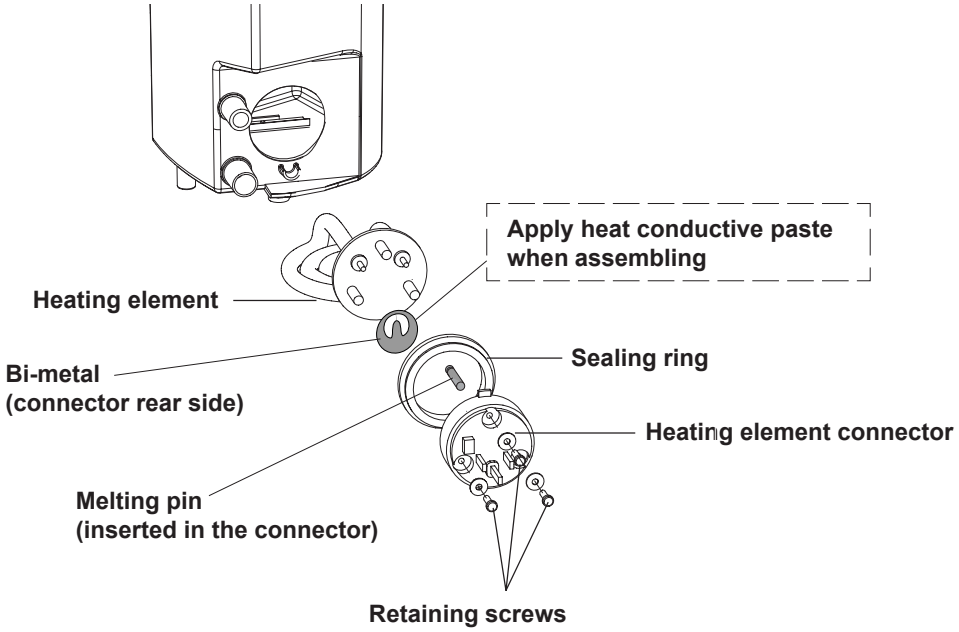
The heating element or the boiler should be discarded if this safety device has been actuated.

To remove the heating element from the boiler:

1. Remove the boiler lid (4 screws).
2. Remove the retaining screws of the heating element.
3. Take the heating element out of the boiler.

⚠ The heating element itself can be very hot!
Be careful and take proper measures when handling.

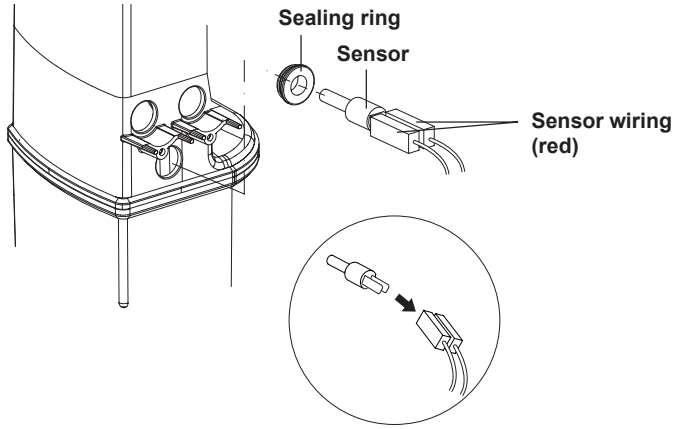
4. Reassemble in reverse order.
   Make sure that the sealing ring between boiler and the heating element is correctly placed when the heating element is being installed.



D. Temperature sensor replacement

1. Unplug the power cord of the machine.
2. Remove the left cover.
3. Empty the boiler. (see page 1 for details)
4. Pull out the temperature sensor.
5. Disconnect the wiring of the sensor.
6. Assemble the machine in reverse order.

(**!**) Make sure that the sealing ring is not worn out / damaged and correctly positioned.



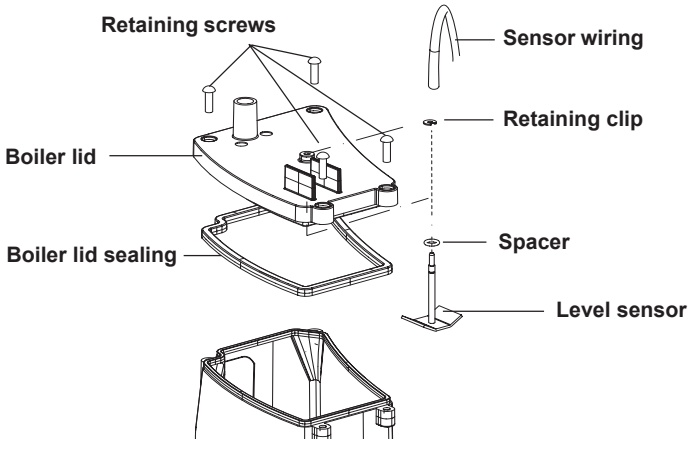
E. Level sensor replacement

1. Unplug the power cord of the machine.
2. Remove the left cover.
3. Remove the lid of the boiler. (4 screws)

The boiler contains very hot water. The level sensor will be hot as well!

4. Disconnect the wiring of the sensor.
5. Remove the retaining clip.
6. The sensor can be pulled out from the inside of the lid.
7. Assemble the machine in reverse order.

Make sure that the wiring is properly connected. If the sensor is not connected, the boiler will overflow as the boiler upper level detection is failing.



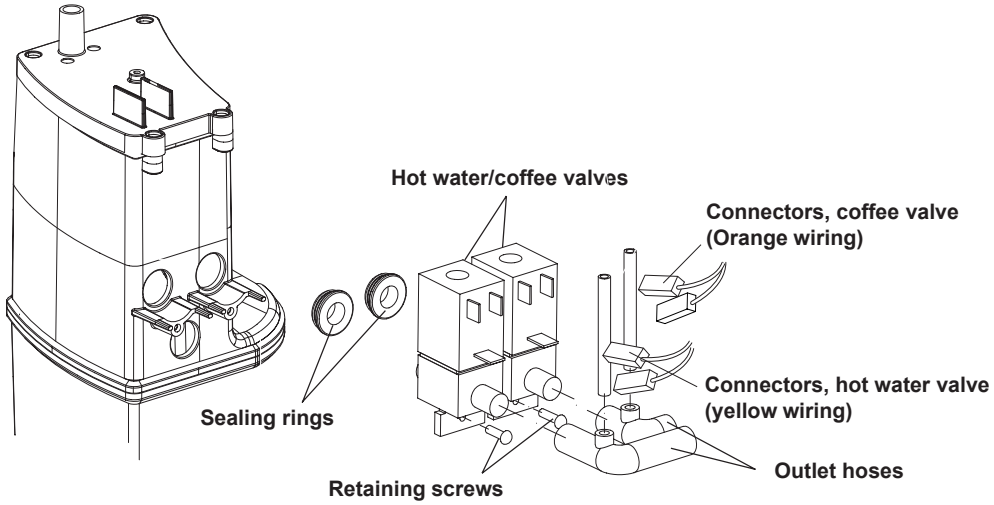
F. Product valves replacement

The coffee valve and hot water valve are part of a single boiler assembly. Rather than disassembling the valves separately, the boiler is replaced as an assembly.
(See boiler replacement, page 1).

To remove the valves:

1. Uplug the power cord.
2. Remove the boiler.
3. Disconnect the wiring.
4. Disconnect the outlet hoses.
5. Remove the retaining screws.
6. Gently pull the valves out of the boiler.
7. Reassemble in reverse order. It is recommended to replace the sealing rings between valve and boiler together with the valves.

Make sure that the sealing rings are not damaged/worn down and correctly positioned.



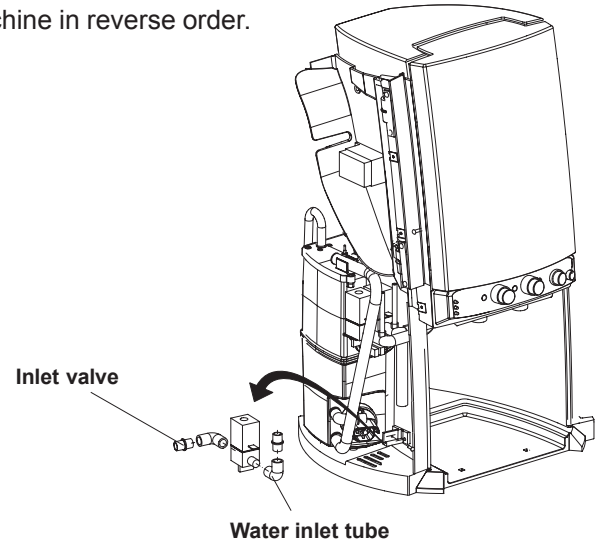
G. Disassembly of the water inlet valve

(not applicable for machines with a fixed water connection)

1. Unplug the power cord.
2. Remove the watertank.
3. Remove the left cover.
4. Empty the boiler and the water inlet hose of the boiler. (see page 1)
5. Unplug the two connectors of the water inlet valve, the inlet and outlet tube.

⚠ Water in the inlet tube will flow out ! Squeeze the tube and use a container to collect this water. Use a cloth to wipe off any remaining water drops.

6. Remove the inlet valve.
7. Assemble the machine in reverse order.

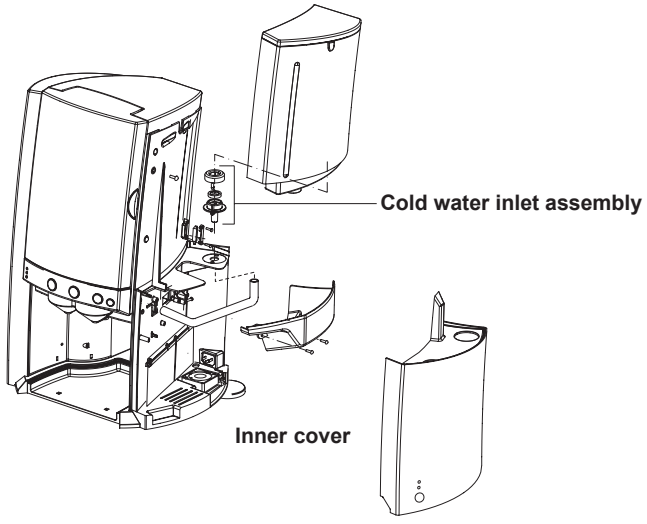


H. Disassembly of the cold water inlet assembly

(not applicable for machines with a fixed water connection)

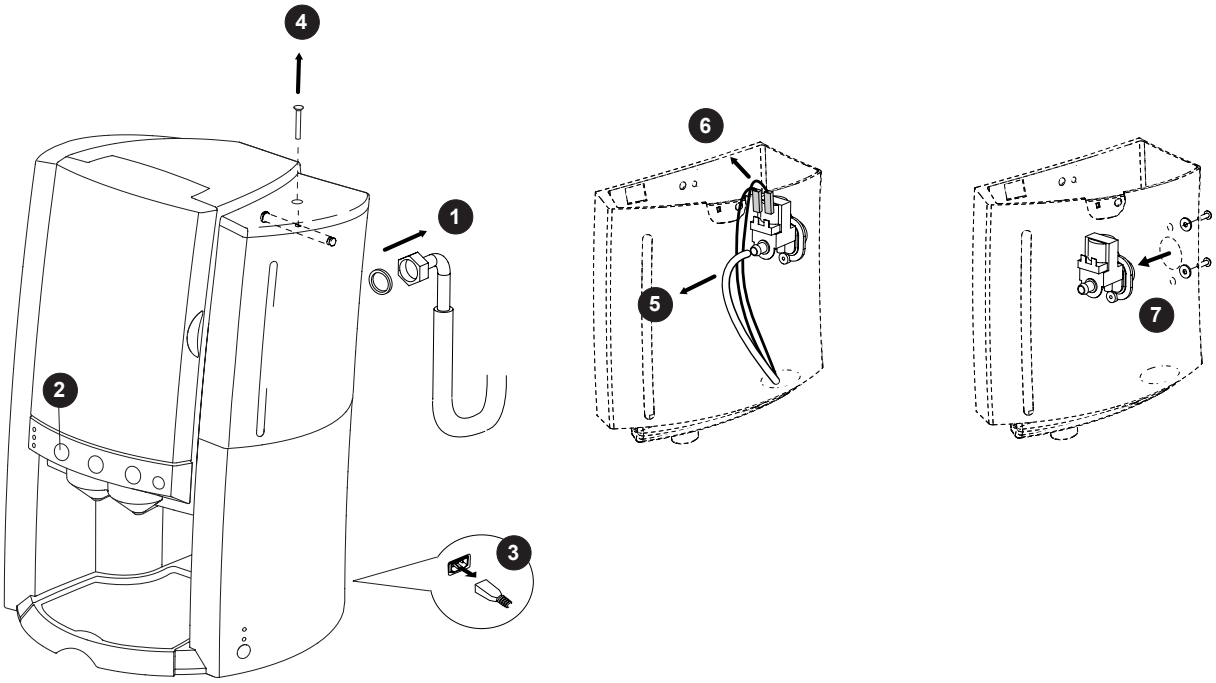
1. Remove the cold water tank.
2. Remove the right cover.
3. Press the inlet upwards to remove.
4. Disconnect the tube through which water is flowing to the valve.

• The inlet can now be replaced. Press the inlet back into the frame and reassemble the cover and place the cold water tank back in place.



I. Disassembly of the water inlet valve

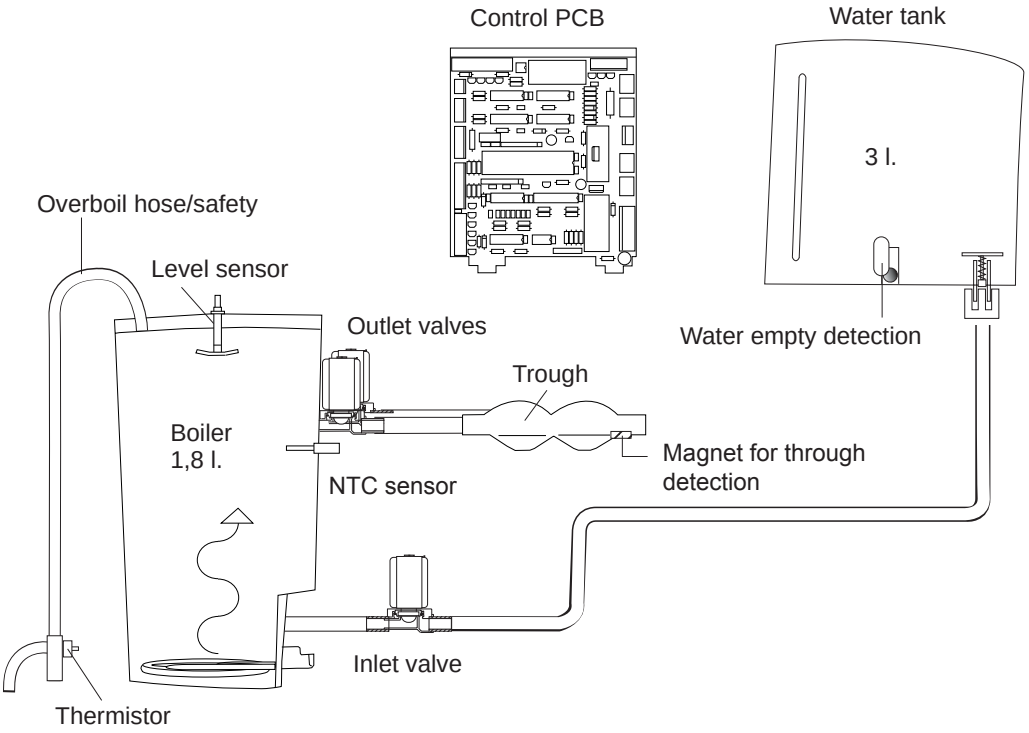
1. Close the faucet and remove the external water supply hose. (water inside!)
2. Pour half a cup of hot water (in order to remove water from the silicon hose attached to the inlet valve). Place the hose upright during the process.
3. Unplug the power cord.
4. Remove the lid of the tank (1 Torx 15 screw).
5. Remove the silicon water hose from the valve.
6. Remove the wiring from the valve (2 connectors).
7. Remove the valve. (2 Torx 15 screws)
8. Disassemble in reverse order. Ensure that :
   - the correct flow restrictor is used
   - the sealing ring of the external water supply hose is placed correctly
   - air is allowed to escape from the external water supply hose.



2. Functional description

A. Water system outline

The water system of machines with a removable water tank consists of several elements; the water tank, the water inlet system, the boiler and water dosing system.



Overview Water system components
Removable water tank

Water tank

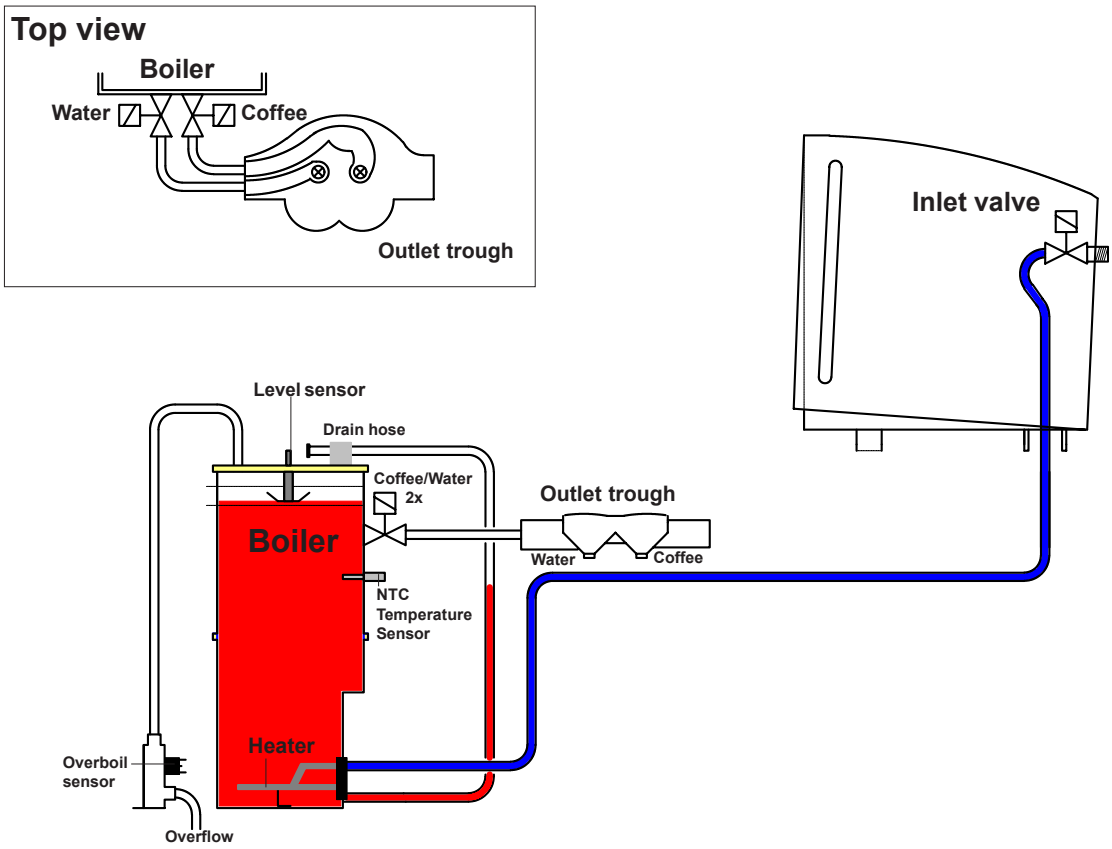
The dispenser features a removable 3 litres/101,5 fl oz cold water tank or a fixed water connection. The water level inside the cold water tank is detected by means of a small floater in a small chamber on the bottom of the tank, that actuates a magneto-electrical sensor when there is no water left in the tank.
A spring operated valve closes automatically when the water tank is lifted for filling or cleaning and opens when placed into position.

Water inlet system

Water from the cold water tank flows to the boiler via the water inlet valve. Water flows to the boiler by gravitation. There is no pump in the system.

The inlet valve is opened 1 sec. after a signal reaches the control board that the water level inside the boiler is low. The inlet valve is closed 1 sec. after the upper boiler water level is detected by the level sensor inside the boiler.
The inlet valve is closed when the machine is in the stand-by mode or when no water is being detected in the cold water tank.

The water system of machines with a fixed water connection does not include the water tank components, whereas the location of the inlet valve differs.



Overview Water system components - Fixed water connection

B. The boiler

Boiler level control

The sensor is basically an electrode that connects to GND (= the water level). The presence of water is checked by sending a pulse of 50 ms. every second. When the water level drops, the sensor does not connect to GND (no pulses return) and a signal is sent to the main board. ($T_{lowlevel}$ > 1 sec.) In turn, the main board sends a signal to the inlet valve and water is supplied.

Boiler temperature control

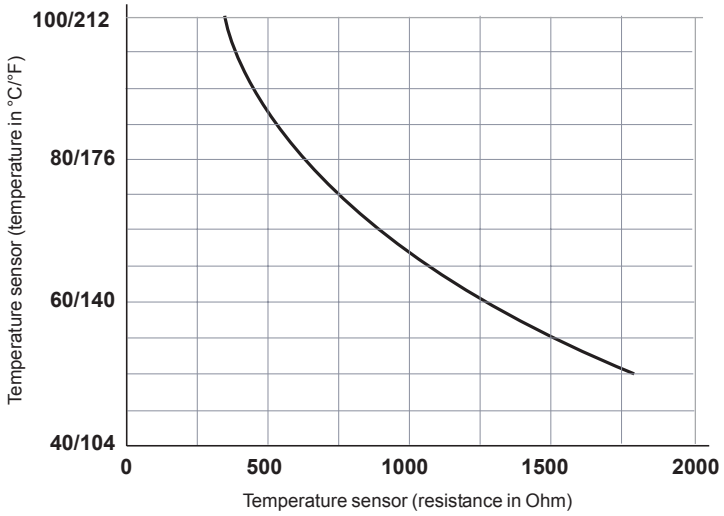
The heater switches on when the temperature drops more than 2 °C/3.6°F under the set temperature. (T_{on}=T_{set}-2 °C/3.6°F) The boiler temperature can be adjusted by means of the service device between 83 ~ 96 °C/205°F. (T_{set}). The default boiler temperature is 92 °C/198°F.

Water is heated by a heating element located at the bottom of the boiler and is activated by a signal from the temperature sensor. The power is supplied directly from the AC input voltage circuit and switched by a relay.

Overheating prevention

If the temperature sensor detects a temperature exceeding the set boiler temperature by 4 °C/7.2°F, the heating element is switched off by means of a relay.

The temperature sensor is an NTC-type sensor; The resistance of the sensor decreases when the water temperature increases. The resistance is continuously measured and the resulting data is processed to control the heating element.



Normal temperature (°C/°F)	Normal resistance (Ohm)
50/122	1802
55/131	1495
60/140	1246
65/149	1044
70/158	878.5
75/167	742.8
80/176	630.7
85/185	537.9
90/194	460.6
95/203	395.9
100/212	341.6

= out of measurement range

Figure 5-a-10 NTC output data control

Water dosing

When the hot water button is pressed, the front outlet valve opens and the programmed amount of hot water is delivered . When the coffee button (cup/pot) is pressed, the rear outlet valve opens.

Outlet valve open control

Delivery mode = portion control:	Set cup volume [ml] / water flow [ml/s]= open time (sec.)
Delivery mode = continuous flow:	Valve opens as long as the specific button is pressed.

Overflow prevention

If water exceeds the maximum level, it will flow into the overflow tube and is flowing out of the machine. A thermistor is mounted next to the hose. When the thermistor detects the presence of hot water (>63°C/145°F ± 5°C/9°F) it will activate the safety circuit, the LED above the main switch starts blinking and power is shut off. The machine can be reset by means of a switch that can be reached through an opening at the rear side of the machine.

Dry running prevention

The dry running prevention is operated by temperature detection (bi-metal) integrated in the heating element connector.
When the boiler temperature exceeds the limit of 4°C/7°F above the set temperature, normally the relay will switch off the power supply. Should the NTC sensor fail to detect a high temperature, the power remains on, the temperature increases and the bi-metal is actuated.
The deformed bi-metal plate presses against a small pin that in turn disconnnects the leads inside the connector and the heating element will be switched off. The bi-metal plate will restore its shape when the boiler temperature has dropped to normal.

There is furthermore a pin at the rear side the connector that functions as a second (back-up) safety component.
In the remote case that the bi-metal safety device fails to disconnect the heating element, this (plastic) pin will melt. When this occurs, the leads inside the connector are disconnected by spring pressure.
The heating element should be discarded if this safety device has been actuated.

3. Options

The fixed water connection

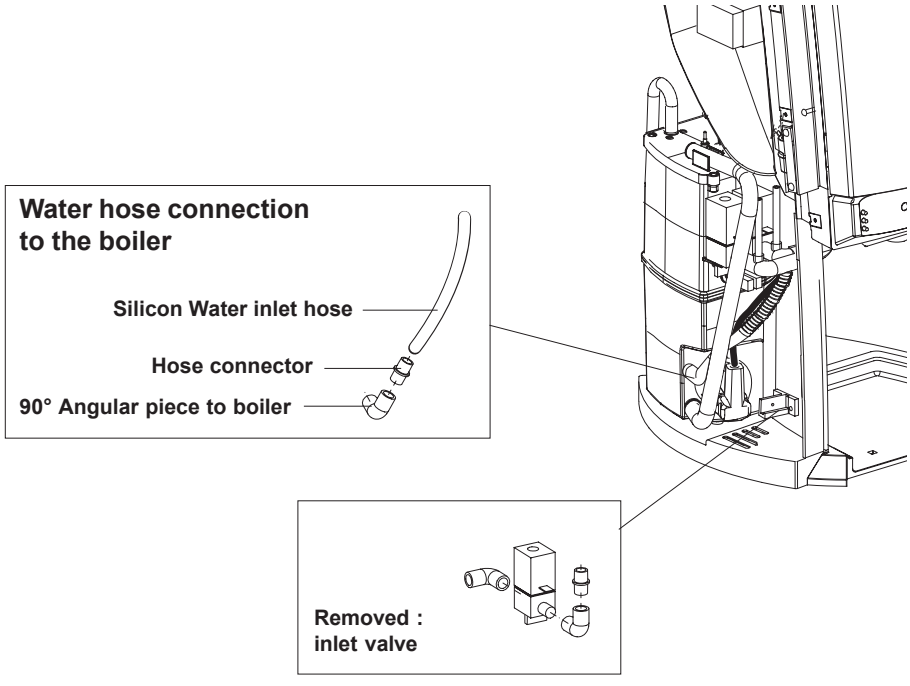
The fixed water connection kit can be installed to dispensers from the 2 series and newer (serial number 0007001 and higher).

Important

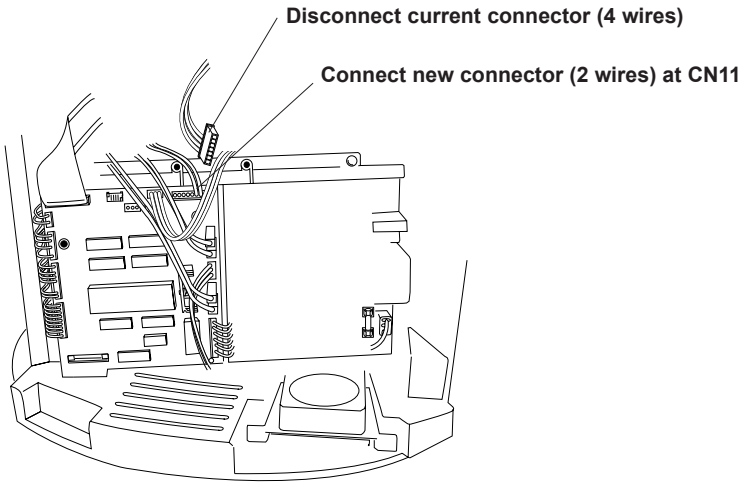
- ⇨ **Ensure that the installation conditions are met before you install the fixed water connection. (refer to chapter 2 page 1)**
- ⇨ **Always observe local regulation regarding plumbing!**
- ⇨ **Water pressure allowed:** **Min. 0.8 bar dynamic pressure**
  Max. 10 bar static pressure
- ⇨ **Attach the caution label (included in the kit) indicating these pressure values in clear sight after installation.**

Installation of the fixed water connection kit (see the parts catalogue for kit contents)

1. Check the water quality and water pressure. Install a water filter/softener if necessary. (min. : 0.8 bar dynamic pressure / max. 10 bar static pressure)
2. Disconnect power cord and remove water tank as well as the left / right machine cover.
3. Empty the boiler. **(Caution : boiler may contain hot very water!)**
4. Disconnect hoses (still water inside) and wiring from the inlet valve and remove the inlet valve.
5. Connect hoses to the boiler as illustrated.

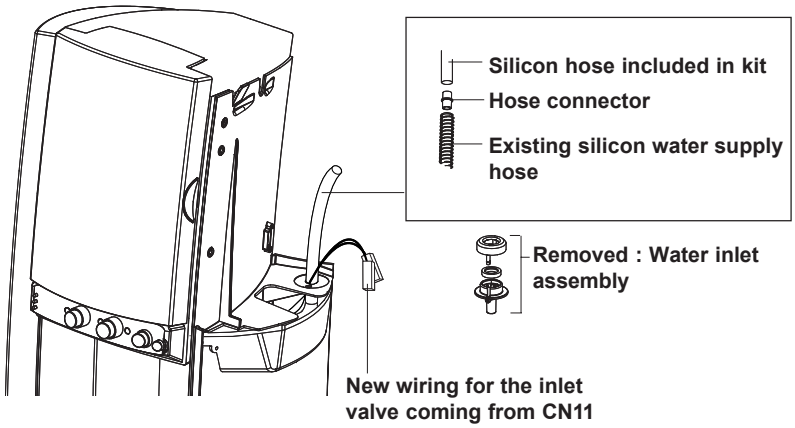

Water hose connection to the boiler
Silicon Water inlet hose
Hose connector
90° Angular piece to boiler
Removed : inlet valve

6. Disconnect the connector (4 wires) of CN11 in the upper right corner of the control PCB and connect instead the prepared connector (2 wires).

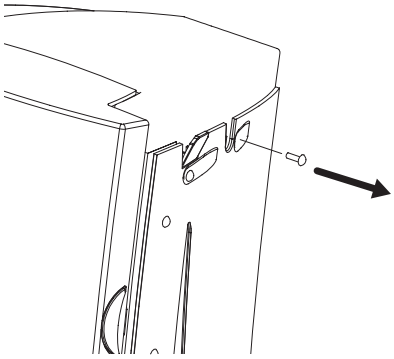


7 Disconnect the silicon hose of the water inlet assembly and remove the water inlet assembly itself.

8. Connect the hose included in the kit and connect it directly to the water supply hose. Guide the hose together with the wiring through the opening in which the water inlet assembly was installed. Reinstall the right cover (electronics cover).


Silicon hose included in kit
Hose connector
Existing silicon water supply hose
Removed : Water inlet assembly
New wiring for the inlet valve coming from CN11

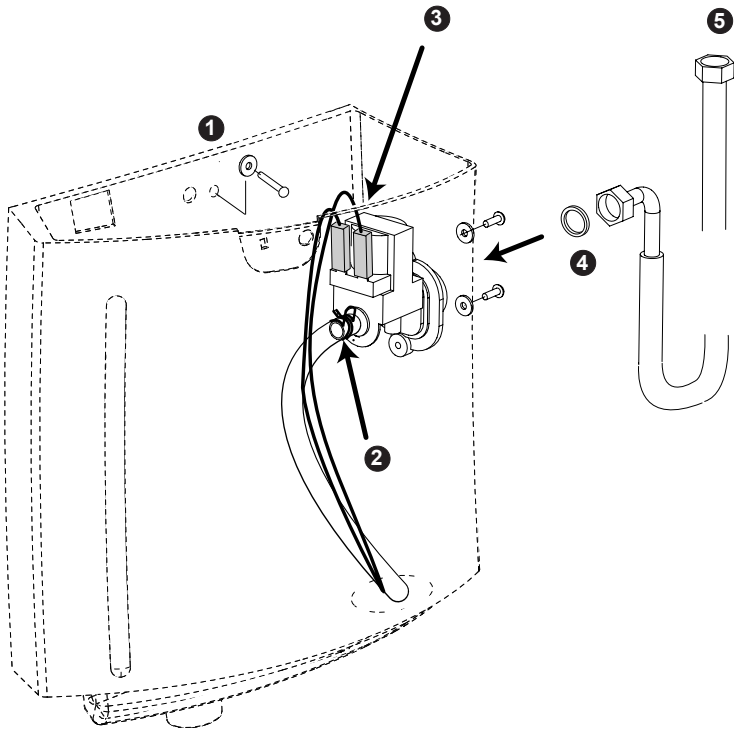
9. Remove the retaining screw from the machine frame as illustrated and place the water tank with the pre-installed valve. Guide the hose and wiring through the opening in the bottom of the tank.



10. Fix the tank with the included retaining screw (**1**) and connect the hose, place the hose clamp (**2**) and the two wires (**3**) to the inlet valve inside.

11. Connect the flexible metal water hose to the valve at the rear side of the tank (**4**)
(Do not forget to place the sealing ring).

12. Connect the water block to the water cock (see the included instructions) and connect the flexible metal water hose. (**5**)



13. Open the water cock, plug in the power cord and switch the machine on. Check the machine performance and ensure that no hose or connection is leaking.

14. Install tank lid and left machine cover.

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5C. Dosing system

1. Disassembly and adjustments

A. Coffee strength adjustment

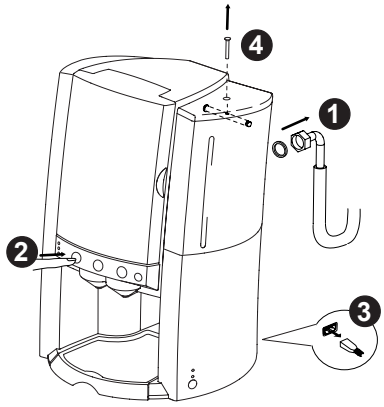
Dosing of the coffee concentrate (i.e. adjustment of the coffee strength) is done by means of (**1**) the service device or (**2**) operation panel button programming.
Please refer to chapter 4 page 2 for service device programming or chapter 4 page 5 for dosing adjustment by means of operation panel buttons.

B. Disassembly of the dosing coil

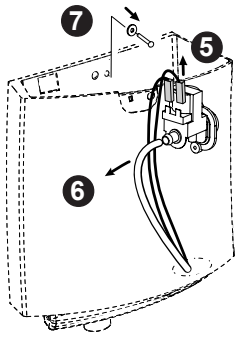
(Store the coffee pack temporarily in a refrigerator)

In case a fixed water connection is installed start from step **1**.
If **no** fixed water connection is installed, unplug the **power cord** and proceed with step **6.**

1. Close the faucet and remove the external water supply hose. (water inside!) [**1**]
   Pour a cup of hot water. [**2**]
2. Unplug the power cord.[**3**]
3. Remove the tank lid.[**4**]



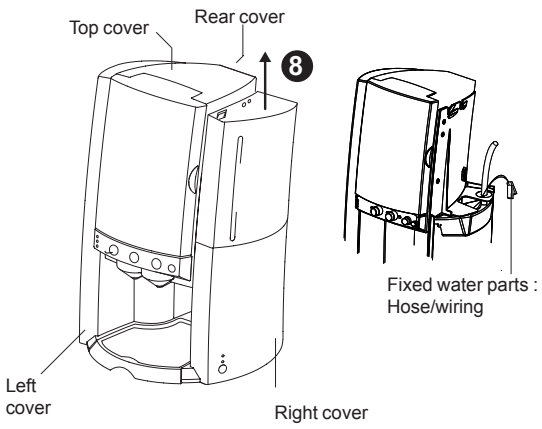
4. Disconnect the silicon water hose [**5**] as well as the wiring [**6**] from the inlet valve.
5. Remove the retaining screw of the tank [**7**] and lift the tank from the machine. (Guide wiring and hose upright trough the opening in the tank.) [**8**]



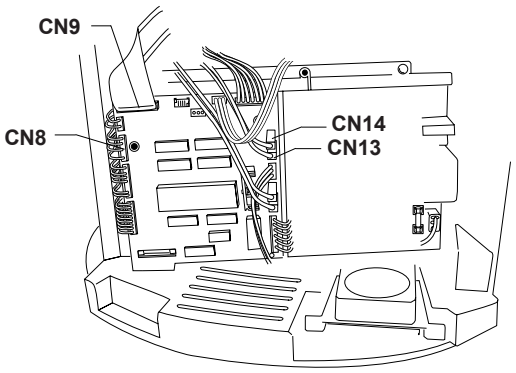
6. Remove all machine covers (left cover, right cover, rear cover and top cover) and the water tank.

About removing the right cover:

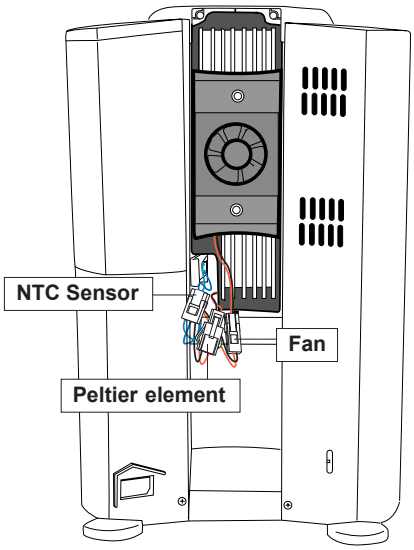
- Remove the screw at the rear side.
- Lift the cover about 12 cm /4”.
- Disconnect the flat cable of the On/Stand by switch on the control PCB. (lower left corner)
- Lift the cover from the machine.



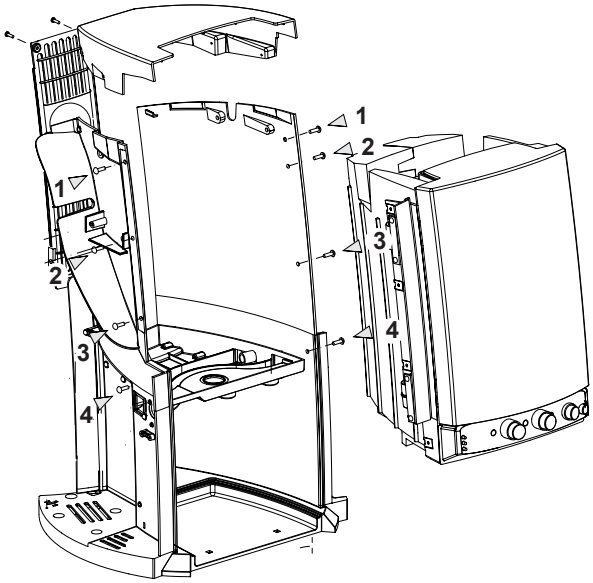
7. Disconnect the connectors CN8, CN9, CN13 & CN14 on the control PCB.



8. Disconnect the wiring of the fan, Peltier element and the NTC sensor. (machine rear side)

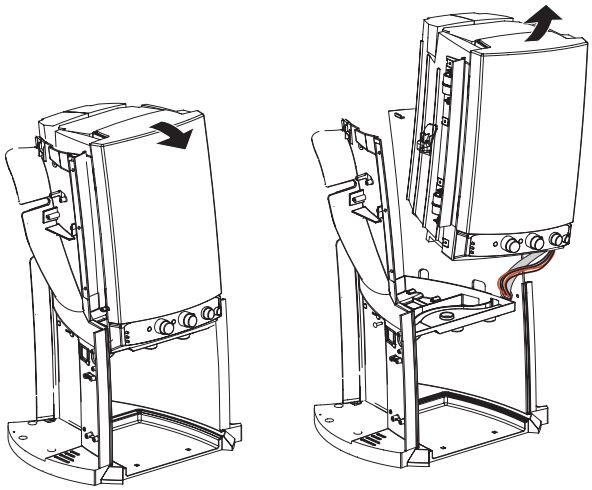


9. Remove the four retaining screws of the complete cooling compartment on both sides of the machine frame.

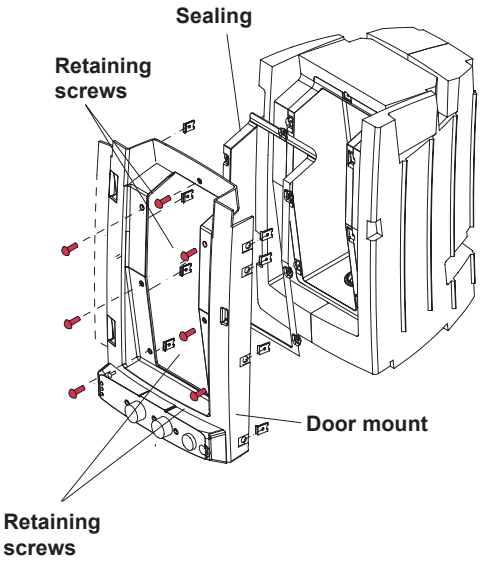


10. Tilt the complete cooling compartment a little towards you.

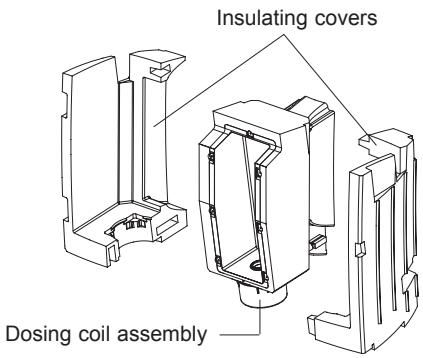
11. Lift the complete cooling compartment assembly (including the operation panel) gentlyfrom the machine, guide the wiring from the control PCB carefully through the opening in the frame to prevent damage to the wiring.



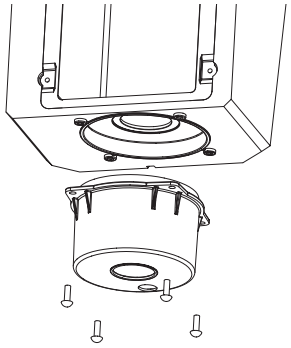
12. Open the door of the cooling compartment and remove the retaining screws of the mount of the door. Remove the door mount and the sealing



13. Remove the left and right thermal insulation.



14. Remove the dosing coil assembly from the cooling compartment. (4 screws)



Remarks

- The dosing coil assembly is available as a single spare part. The sub-parts are not separately available.
- The dosing pump is an intregrated part of the coffee pack and can not be disassembled or adjusted. It is a closed system to prevent that air can affect the quality of the coffee concentrate.

2. Functional description

The coffee concentrate is delivered in a 1.25 liter/ 42.3 fl oz bag in box. It is a closed system with an intregrated dosing pump inside the tube.
The pump is operated by the B2 dosing coil. A current of 5.2 A is applied to the B2 dosing coil to generate a magnetic field that generates the pumping action.

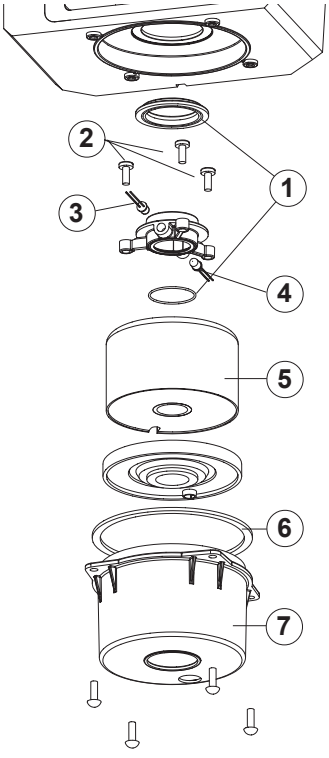
Dosing system structure

Dosing coil

The dosing coil assembly is available as a single spare part. The sub-parts are not separately available.

Dosing pump

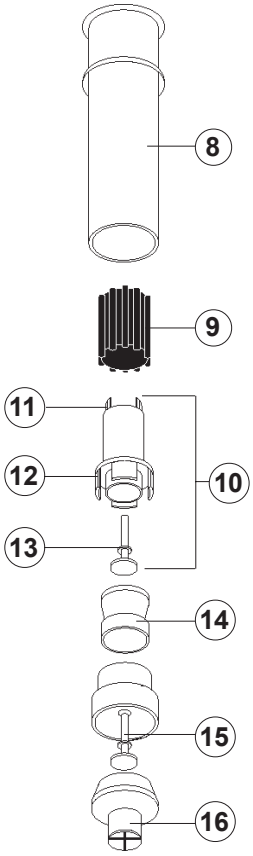
The dosing pump is an intregrated part of the coffee pack and can not be disassembled or adjusted. It is a closed system to prevent that air can affect the quality of the coffee concentrate.



1. Lower sealing rings
2. Retaining screws
3. IR transmitter
4. IR receiver
5. B2 dosing coil
6. Upper sealing ring
7. Housing

---

8. Dosing tube
9. Floater
10. Tappet
11. Tappet ring
12. Ring carrier
13. Inlet valve
14. Bellow
15. Outlet valve
16. Outlet nozzle

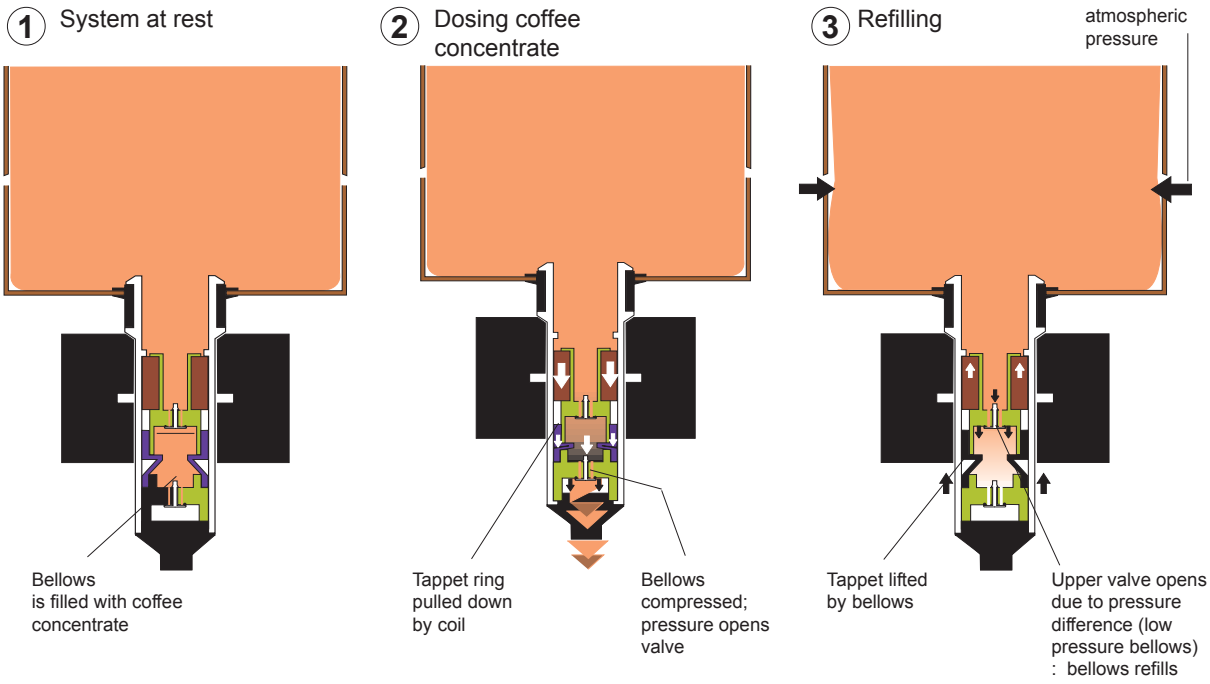


Dosing sequence

1. The system is at rest. There is coffee concentrate present in the bellows.

2. When a magnetic field is generated, the tappet (consisting of the tappet ring, ring carrier and inlet valve) is pulled downwards.
   The bellows filled with concentrate is squeezed and delivers the coffee concentrate via the outlet valve to the trough.
   The dosing pump will deliver approx. 0,105 cc during 1 pulse of 6.8 ms
   (effective pulse duration: 6.5 ~7.2 ms).

3. Directly after the pulse, the tappet moves upwards the bellows assumes its normal shape and the next bit of coffee concentrate flows into the bellows via the inlet valve that has been opened by the pressure difference. (atmospheric pressure - low pressure inside the bellows as its shape is restored)


1 System at rest
2 Dosing coffee concentrate
3 Refilling
atmospheric pressure
Bellows is filled with coffee concentrate
Tappet ring pulled down by coil
Bellows compressed; pressure opens valve
Tappet lifted by bellows
Upper valve opens due to pressure difference (low pressure bellows) : bellows refills

Coffee empty detection

The dosing coil assembly features an optical infra-red sensor (consisting of a transmitter and a receiver). An IR beam is continuously directed through a transparent part of the dosing tube and as long there is coffee inside the pack a black floater blocks the beam.
When the coffee inside the pack has been consumed, a black floater inside the tube drops and does not any longer block the beam of the transmitter. The receiver will thereupon send a signal to the main PCB.

5D. Product delivery

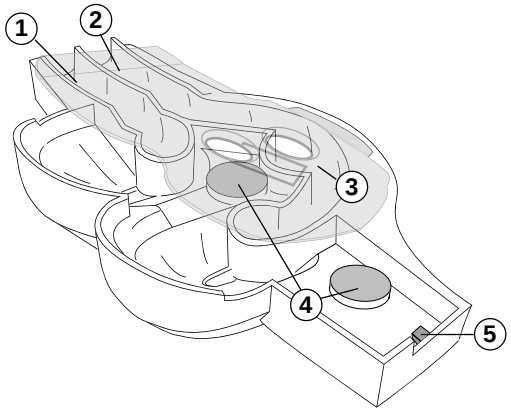
There are no complicated disassembly procedures or adjustments regarding product delivery system. This chapter consists therefore of a brief overview.

Overview product delivery parts

The product delivery area consists of just the trough and the drip tray with the grille on which the cups, mugs or pot can be placed.

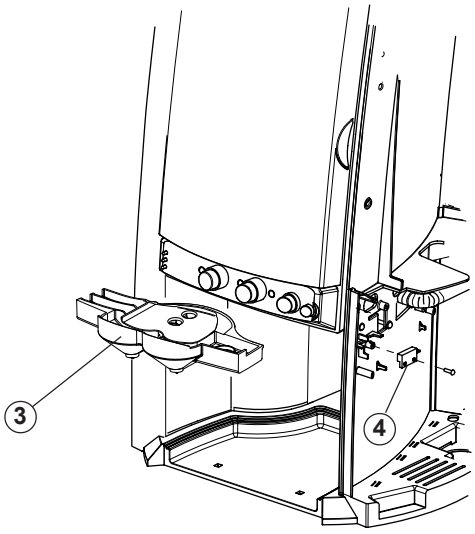
Inside the trough there are two separate channels to deliver coffee or hot water.
The front channel guides the water coming from the hot water valve to the hot water delivery spout, whereas the rear channel guides water from the coffee valve to the coffee delivery outlet.
The latter guides the water through a circular area in which the water is mixed with incoming concentrated coffee dosed by the B2 dosing system.
The trough is equipped with a lid from serial no. 0128XXXX to prevent that coffee in the trough can pollute surrounding machine parts. Following this change the outlets are positioned more to the front. The position of the grid holes of the drip tray grid have been repositioned accordingly.

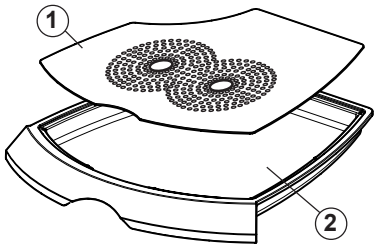
The presence of the trough is detected by means of a reed sensor. If the trough is not placed, the safety circuit is activated and all main functions (except for cooling) are blocked.



1. Hot water channel
2. Coffee channel
3. Mixing chamber
4. Retaining magnet
5. Magnet for trough detection

Trough





1. Cup grille
2. Drip tray
3. Trough
4. Reed sensor

Delivery area parts

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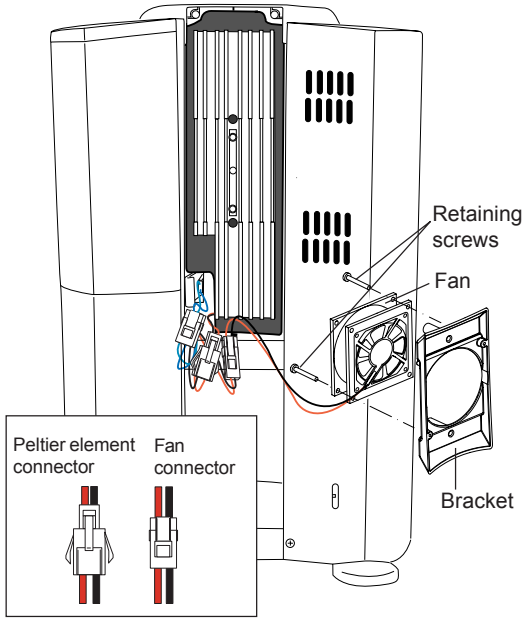
5F. Cooling system

1. Disassembly

A. Fan replacement

1. Unplug the power cord.
2. Remove the rear cover (two screws).
3. The fan is mounted on the heat sink.
   Remove the 2 screws of the fan bracket.
4. Take the fan out, remove the fan from its bracket (2 screws) and disconnect the wiring of the fan. (red/black wiring - see the illustration for recognition of the connector)
5. Reassemble the machine in reverse order.



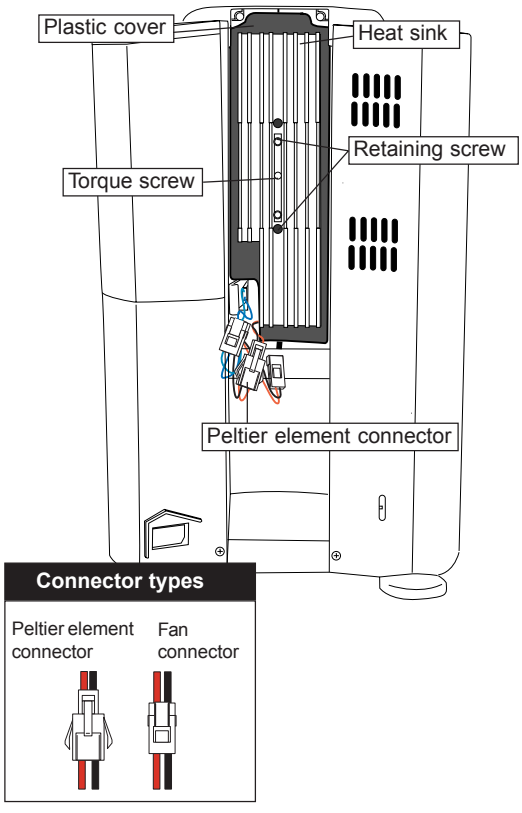
B. Peltier element replacement

1. Unplug the power cord.
2. Remove the rear cover (2 screws).
3. Remove the fan (2 screws). See above.
4. Remove the heat sink and the Peltier element retainer. (2 retaining screws)

Do not disturb the torque screw without the proper tools! (Re)installation requires utmost accuracy.

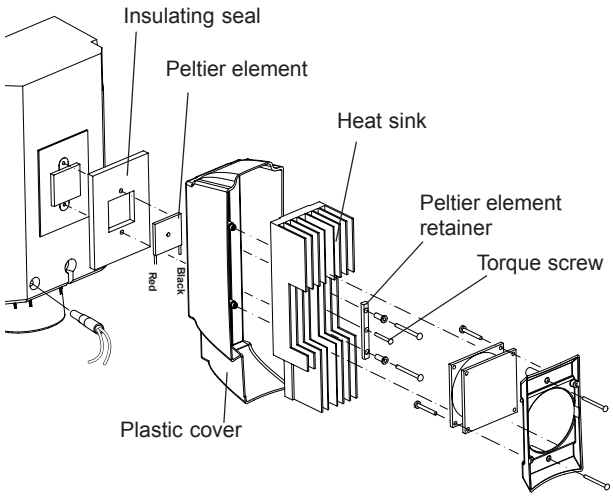
The Peltier element itself is situated behind the plastic inner cover in which the heat sink is installed.

5. Disconnect the wiring of the Peltier element. (red/black - see the illustration)



6. Replace the element and connect the wiring.

Connect the red wire at the left side and the black wire at the right side



7. Apply conductive paste to both sides of the peltier element. Make sure that the surfaces of the element are clean and free of any particles.

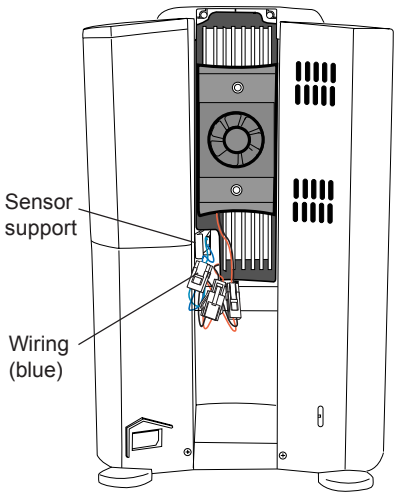
8. Put the peltier element back in place. (black wire = right side/ red wire left)

9. Put the heat sink and the retainer back in place. Make sure that the Peltier element is correctly positioned (and the wiring and the element itself are not squeezed)

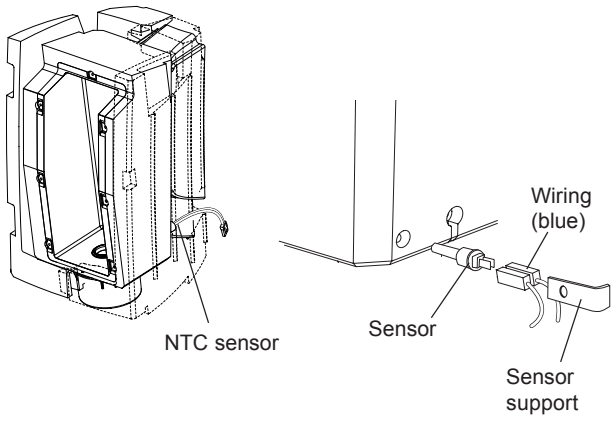
10. Fasten the both retaining screws of the peltier element retainer.
11. Fasten the screw in the middle (peltier element retainer) with a torque wrench (140 Ncm).
12. Reinstall the fan, the rear cover and reconnect the power cord.

C. NTC element replacement

1. Unplug the power cord.
2. Remove the rear cover (2 screws).
3. Put the connectors in the lower left corner aside. The sensor/support/wiring of the NTC sensor can now be reached.
4. Pull the NTC sensor out. Do not apply force.
5. Disconnect the connector. (blue wiring)
6. Reassemble the machine in reverse order.



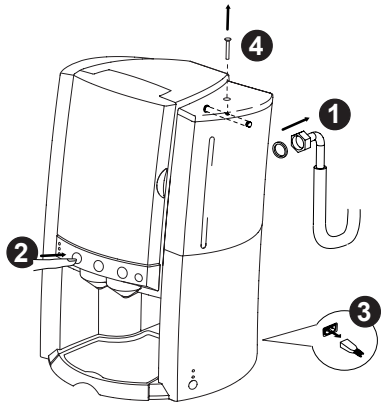
Push the NTC sensor back in as far as possible.



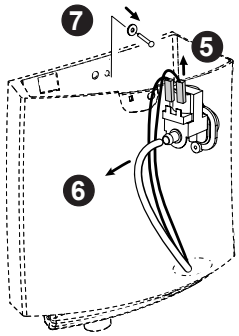
D. Disassembly of the complete cooling unit

The cooling compartment must be disassembled to reach the dosing coil (see also 5C) or in case the cooling compartment itself has to be replaced.

In case a fixed water connection is installed start from step 1.
If no fixed water connection is installed, unplug the power cord and proceed with step 6.

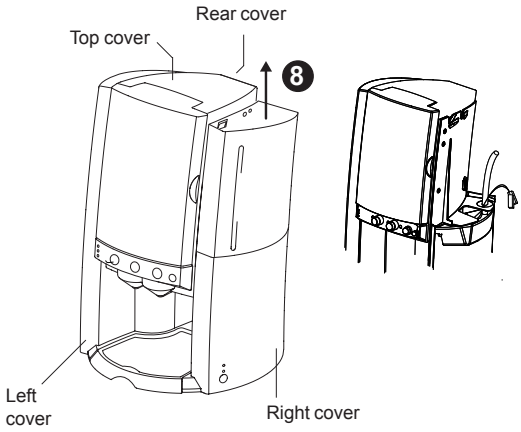


1. Close the faucet and remove the external water supply hose. (water inside!) [**1**]
   Pour a cup of hot water. [**2**]
2. Unplug the power cord.[**3**]
3. Remove the tank lid.[**4**]



4. Disconnect the silicon water hose [**5**] as well as the wiring [**6**] from the inlet valve.
5. Remove the retaining screw of the tank [**7**]and lift the tank from the machine. (Guide wiring and hose upright trough the opening in the tank.) [**8**]

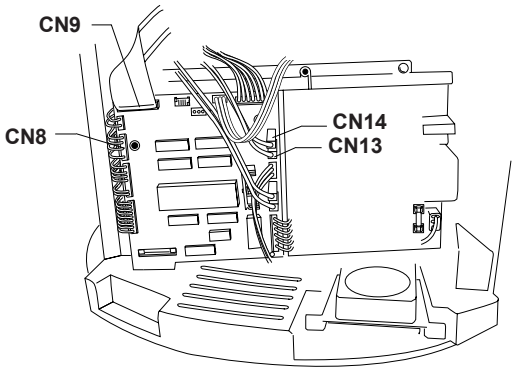
6. Remove all machine covers (left cover, right cover, rear cover and top cover) and water tank.



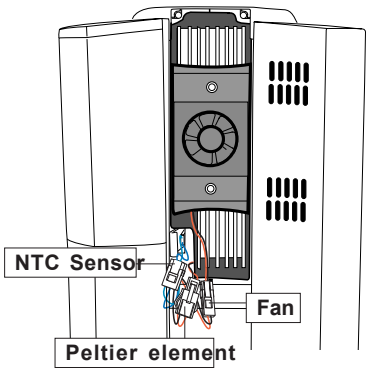
About removing the right cover:

- Remove the screw at the rear side.
- Lift the cover about 12 cm /4".
- Disconnect the flat cable of the On/Stand by switch on the control PCB. (lower left corner)
- Lift the cover from the machine.

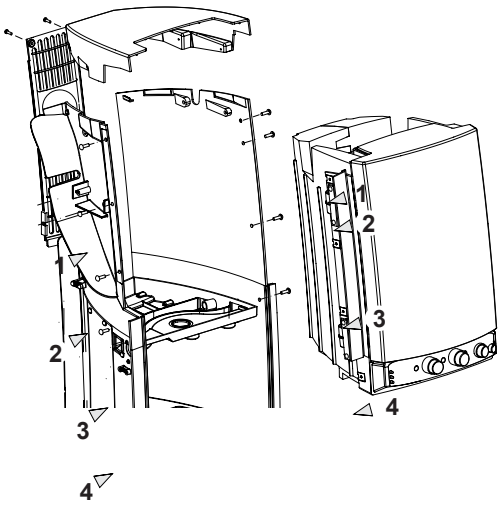
7. Disconnect the connectors CN8, CN9, CN13 & CN14 on the control PCB.



8. Disconnect the wiring of the fan, Peltier element and the NTC sensor. (machine rear side)

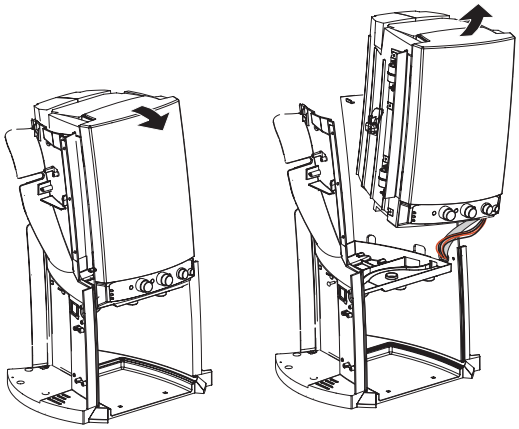


9. Remove the four retaining screws of the complete cooling compartment on both sides of the machine frame.

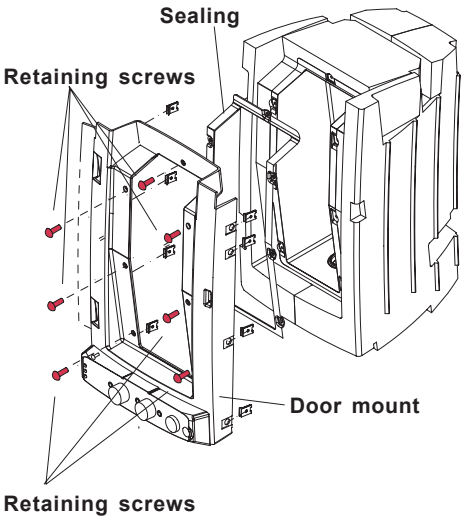


10. Tilt the complete cooling compartment a little towards you.

11. Lift the complete cooling compartment assembly (including the operation panel) gentlyfrom the machine, guide the wiring from the control PCB carefully through the opening in the frame to prevent damage to the wiring.



12. Open the door of the cooling compartment and remove the retaining screws of the mount of the door.



2. Functional description

General

The cooling system is designed to maintain a constant temperature of 2~5 °C/ 35.6~41°F inside the cooling compartment. The machine features a thermo-electric cooling system. The low temperature is generated by a Peltier element that is actuated between 3.5/38.3°F and 4,5 °C/40.1°F

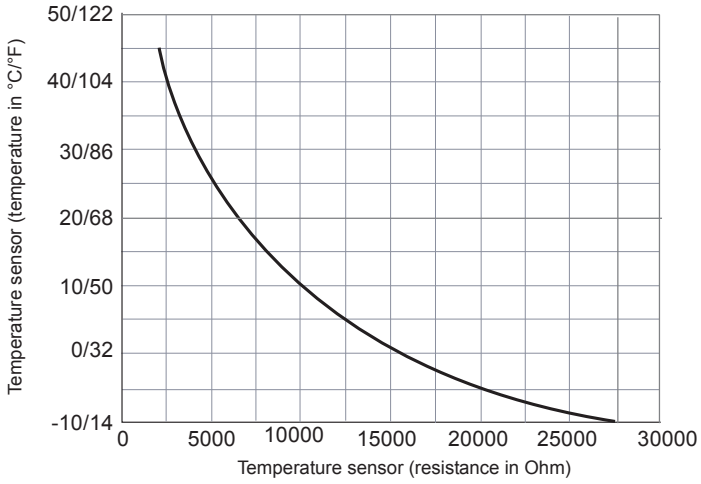
The peltier element is basically a series of thermo-electric cooling cells consisting of 2 bismuth semi-conductive bridges. The bridges are made of tellurium with different surface layers. An electric current is applied to create the heat transfer.
A sealing is applied to the contact surfaces of the peltier element to prevent that the condensated water would cause corrosion.

The heat from the interior of the cooling compartment is transferred by the peltier element onto an alluminium heat sink and removed by a cooling fan. The fan remains on in the stand-by mode.

Temperature control

The temperature inside the cooling compartment is detected by an NTC sensor. The resistance in the sensor reduces when the temperature rises and vice versa. The resistance generated by the sensor is constantly measured and used for the on/off control of the peltier element current. The effective input range is ±17000 ~ 9000 Ohm (1°C~12 °C/33.8~53.6°F)

Resistance measurement

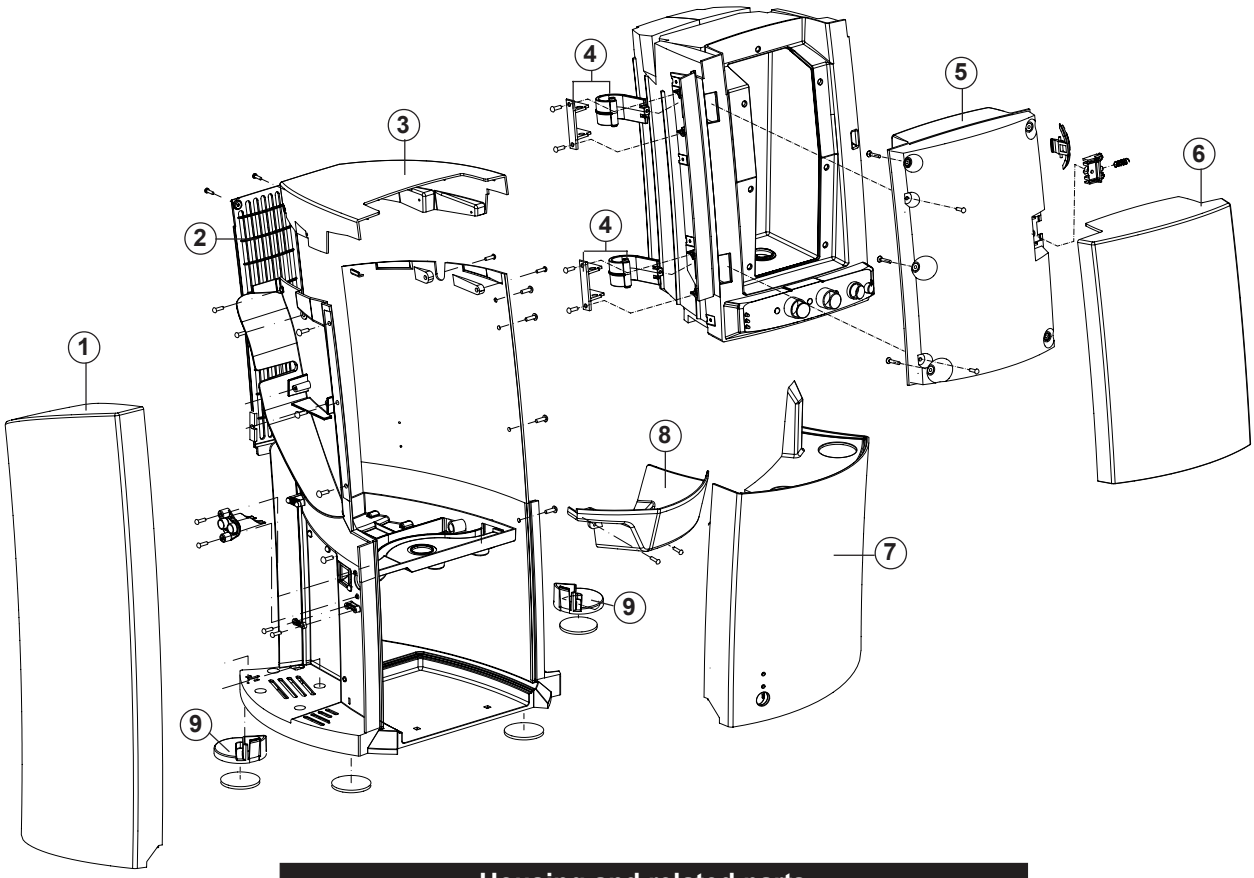


Normal temperature (°C/ °F)	Normal resistance (Ohm)
-10 / 14	27667
-6 / 21.2	21156
0 / 32	16322
5 / 41	12690
10 / 50	9946
15 / 59	7851
20 / 68	6243
25 / 77	4998
30 / 86	4027
35 / 95	3265

5G. Housing

There are no complicated disassembly procedures or adjustments regarding covers and frames.
This chapter consists therefore of a brief overview.

Overview of machine covers



Housing and related parts

1. Left cover
2. Rear cover
3. Top cover
4. Hinge, door
5. Door assembly
6. Door cover
7. Right cover
8. Inner cover
9. Rear machine support

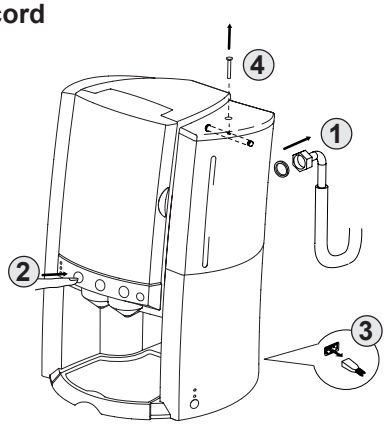
5K. Machine control

1. Disassembly

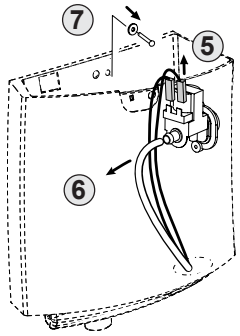
A. Control board replacement

Beware of static electricity. It could cause serious damage to the EPROM or the printed circuit board and its components. Store circuit boards in conductive sponge rubber or similar materials.

In case a fixed water connection is installed start from step 1.
If no fixed water connection is installed, unplug the power cord and proceed with step 6.



1. Close the faucet and remove the external water supply hose. (water inside!) [**1**]
   Pour a cup of hot water. [**2**]
2. Unplug the power cord.[**3**]
3. Remove the tank lid.[**4**]

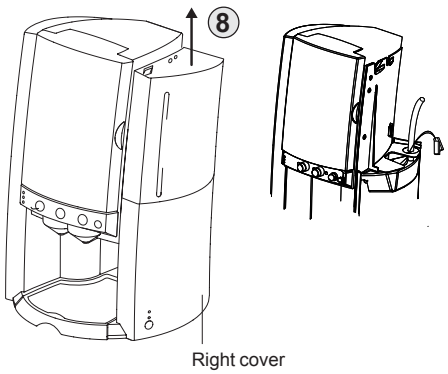


4. Disconnect the silicon water hose [**5**] as well as the wiring [**6**] from the inlet valve.
5. Remove the retaining screw of the tank [**7**]and lift the tank from the machine. (Guide wiring and hose upright trough the opening in the tank.) [**8**]

6. Remove the right cover and the water tank.

About removing the right cover:

- Remove the screw at the rear side.
- Lift the cover about 12 cm /4”.
- Disconnect the flat cable of the On/Stand by switch on the control PCB. (lower left corner)
- Lift the cover from the machine.



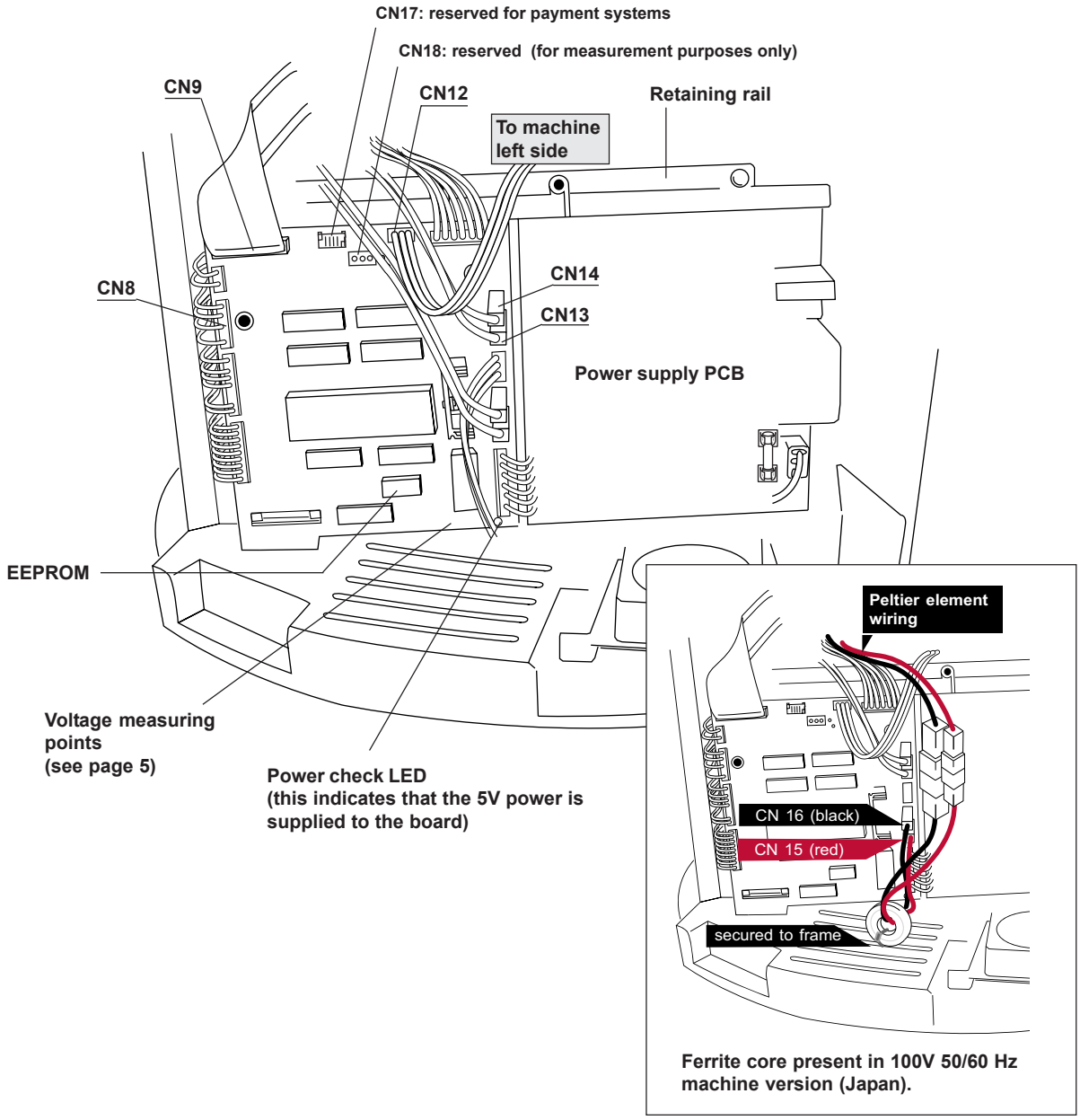
7. Unplug the connectors from the control board. (There is no specific order of disconnecting)

8. Loosen the screws (2) of the retaining rails, remove the rails and take the board out.

> The settings of the machine are stored in the EEPROM. When you install a new control PCB you may want to use the EEPROM from the board that was installed in the machine and mount it on the new control board. Align the notch of the EEPROM / micro-processor with the notch in the socket of the PCB!
> **Do not replace the EEPROM without the proper tools or training! Incorrect handling will cause instant damage to the electrical components.**

9. Install the new board back into the machine and connect the various connectors.

10. Reassemble the machine and program the machine if a new board with new EEPROM is installed.



B. Power supply board replacement

This procedure is largely similar to control board replacement.
Please refer for details to that procedure.

In case a fixed water connection is installed start from step 1.
If no fixed water connection is installed, unplug the power cord and proceed with step 6.

1. Close the faucet and remove the external water supply hose. (water inside!)
   Pour a cup of hot water.
2. Unplug the power cord.
3. Remove the tank lid.
4. Disconnect the silicon water hose as well as the wiring from the inlet valve.
5. Remove the retaining screw of the tank and lift the tank from the machine. Guide wiring and hose upright trough the opening in the tank.
6. Remove the right cover.
7. Unplug the connectors from the power supply board. (There is no specific order of disconnecting)
8. Loosen the screws (2) of the retaining rails, remove the rails and take the board out.
9. Install the new board back into the machine and connect the various connectors.
10. Reassemble and test the machine.

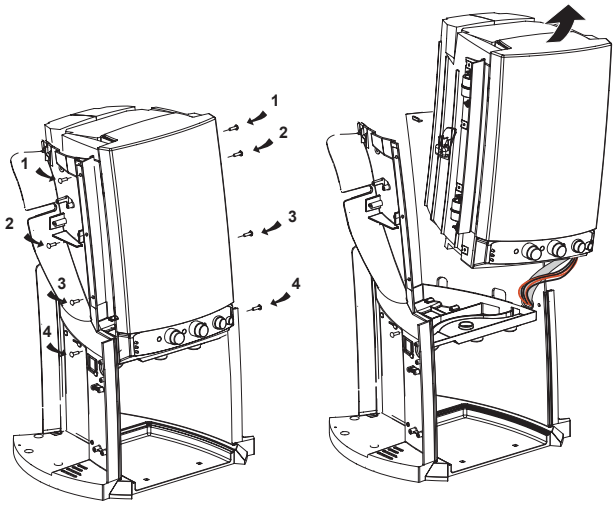
C. Operation unit replacement (Foil Print)

In case a fixed water connection is installed start from step 1.
If no fixed water connection is installed, unplug the power cord and proceed with step 6.

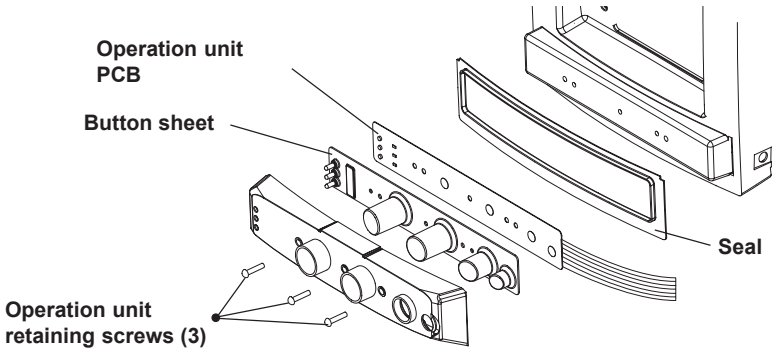
1. Close the faucet and remove the external water supply hose. (water inside!)
   Pour a cup of hot water.
2. Unplug the power cord.
3. Remove the tank lid.
4. Disconnect the silicon water hose as well as the wiring from the inlet valve.
5. Remove the retaining screw of the tank and lift the tank from the machine. Guide wiring and hose upright trough the opening in the tank.
6. Remove the water tank, right cover, left cover top cover and rear cover.
7. Remove the operation panel cover.
   Be careful not to damage the part when it is being removed.

8. Disconnect the flat cable in the upper left corner of the control board.
   Never pull the cable, but release the two retaining clips at each side of the connector.

9. Loosen the retaining screws of the cooling compartment assembly (4 at each side of the frame and lift the cooling comparment a little to create some space for the flat cable to pass through.



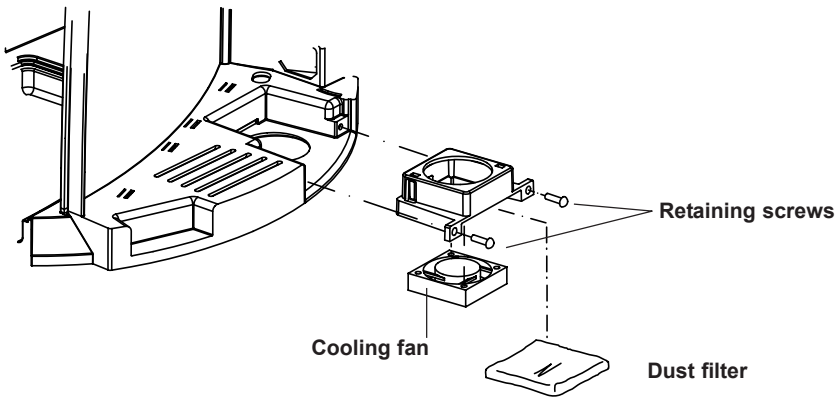
10. Remove the screws of the operation unit (3 screws) to separate the unit from the cooling compartment. The button assembly and operation board can now be removed.
11. Reassemble the parts in reverse order.



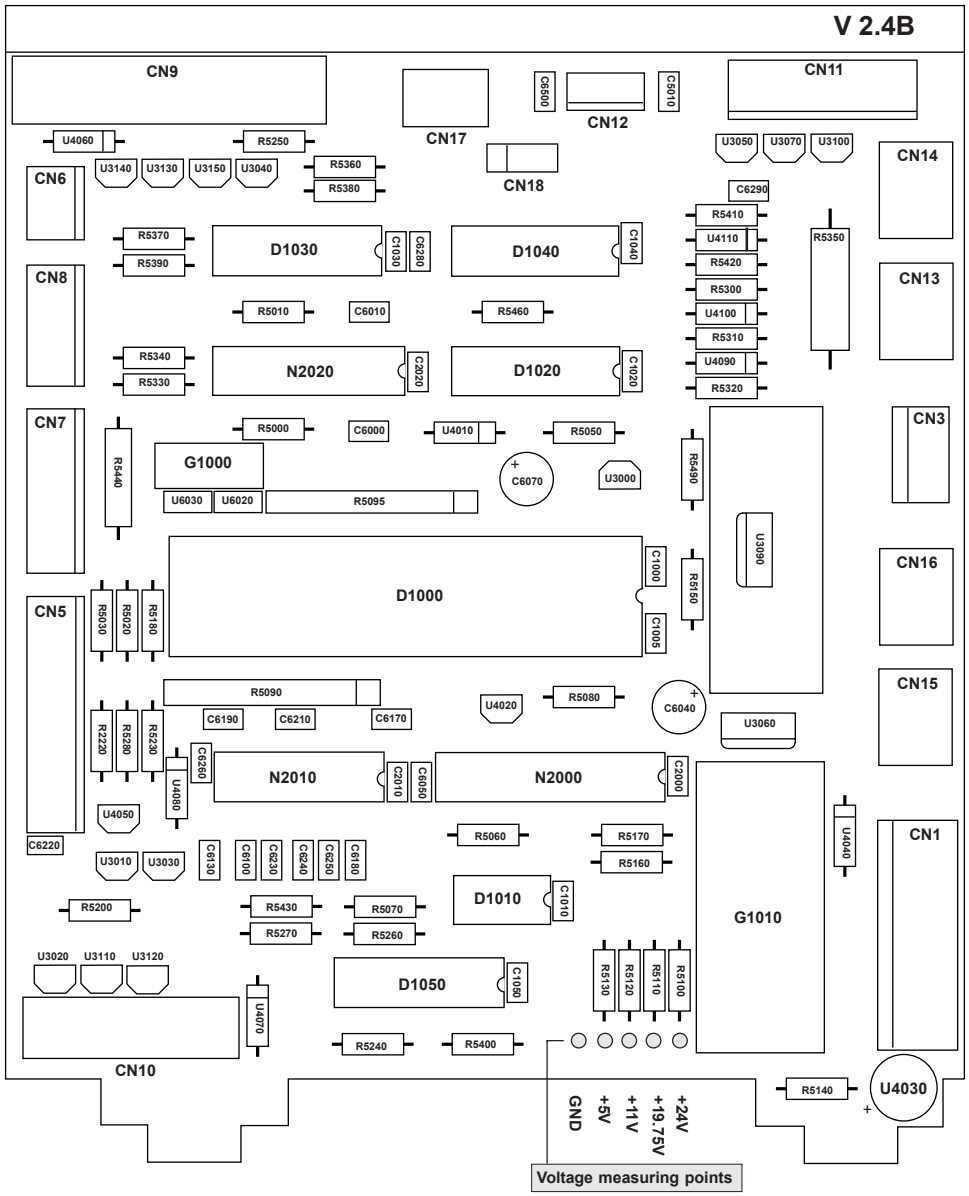
D. Electronics fan replacement

In case a fixed water connection is installed start from step 1.
If no fixed water connection is installed, unplug the power cord and proceed with step 6.

1. Close the faucet and remove the external water supply hose. (water inside!)
   Pour a cup of hot water.
2. Unplug the power cord.
3. Remove the tank lid.
4. Disconnect the silicon water hose as well as the wiring from the inlet valve.
5. Remove the retaining screw of the tank and lift the tank from the machine. Guide wiring and hose upright trough the opening in the tank.
6. Remove the water tank and the right cover (1screw).
7. Remove the dust filter.
8. Loosen the retaining screws (2) of the fan.
10. Take the fan and disconnect the wiring from the Operating unit PCB. (CN3)
11. Reassemble the parts in reverse order.



2. Control board component lay-out and in-/output voltages



Pin in- and output voltages

Connector/pin	Voltage	Remarks
1-1	5V	Power supply 5 V circuit
1-2	GND	
1-3	19,75V	Power supply 19,75 V circuit (dosing coil)
1-4	24V	Power supply 24 V circuit
1-5	GND	
1-6	11V	Power supply 11 V circuit (peltier element)
3-1	11V	Power supply additional fan
3-2	GND	Additional fan GND
3-3	-	Not connected
5-1	-	NTC sensor boiler
5-2	-	NTC sensor boiler analogue GND
5-3	-	Boiler level sensor
5-4	24V	Hot water valve supply
5-5	0/24V	Hot water valve return (0V=On/24V=off)
5-6	24V	Coffee valve supply
5-7	0/24V	Coffee valve return (0V=On/24V=off)
5-8	24V	Safety circuit supply
5-9		Safety circuit return
6-1	24V	Heater relay
6-2	0/24V	Heater relay return (0V=On/24V=off)
7-1	± 6V	Cooling fan GND
7-2	24 V (16,4 V)	Cooling fan power supply
7-3	GND	Not connected
7-4	GND	Not connected
7-5	-	NTC sensor cooling analogue GND
7-6	-	NTC sensor cooling
8-1	-	GND emitter wire III
8-2	-	B2 empty detection collector wire III
8-3	-	GND kathode wire II
8-4	-	IR LED anode wire I
9-1	-	GND (Shield)
9-2	-	GND (Shield)
9-3	-	GND
9-4	0/5V	Stop switch (0V=Pressed/5V=Not pressed)
9-5	0/5V	Pot of coffee switch (0V=Pressed/5V=Not pressed)
9-6	0/5V	Cup of coffee switch (0V=Pressed/5V=Not pressed)
9-7	0/5V	Hot water switch (0V=Pressed/5V=Not pressed)
9-8	±0/±4V	Boiler coiler cold LED (0V=Off/4V=On)
9-9	±0/±4V	Water empty LED (0V=Off/4V=On)
9-10	±0/±4V	Coffee empty LED (0V=Off/4V=On)
10-1	±0/±4V	Main switch (0V=Pressed/5V=Not pressed)
10-2		GND
10-3	±0/±4V	Cooling LED (0V=Off/4V=On)
10-4	±0/±4V	Main power LED (0V=Off/4V=On)
10-5	-	GND (Shield)
10-6	-	GND (Shield)

Connector/pin	Voltage	Remarks
11-1	0/5V	Cold water empty detection (0V=Water/5V=No water)*
11-2	GND	Cold water empty detection GND*
11-3	24V	Cold water valve power supply
11-4	0/24V	Cold water valve return (0V=On/24V=off)
11-5	GND	Not connected
11-6	GND	Not connected
11-7	GND	Not connected
12-1	-	Not connected
12-2	-	Not connected
12-3	-	Not connected
12-4	-	Not connected
12-5	-	Not connected
12-6	-	Serial out service device
12-7	-	GND
12-8	-	Not connected
12-9	-	Serial in service device
13-1	19,75V	Dosing coil power supply
14-1	-	Dosing coil return
15-1	0/11V	Peltier element (0 V = On / 11 V = 0ff)
16-1	0/11V	Peltier element return (0 V = On / 11 V = 0ff)
17-1	5V	Power supply
17-2	-	Dataline coin mechanism
17-3	-	Clockline coin mechanism
17-4	-	GND
18-1	0 V	B2 Current -
18-2	1,15 V	B2 Current +
18-3	0 / 5 V	B2 coil control (Off=0V/On=5V)

(*Not connected when the connector of the fixed water connection is plugged in)

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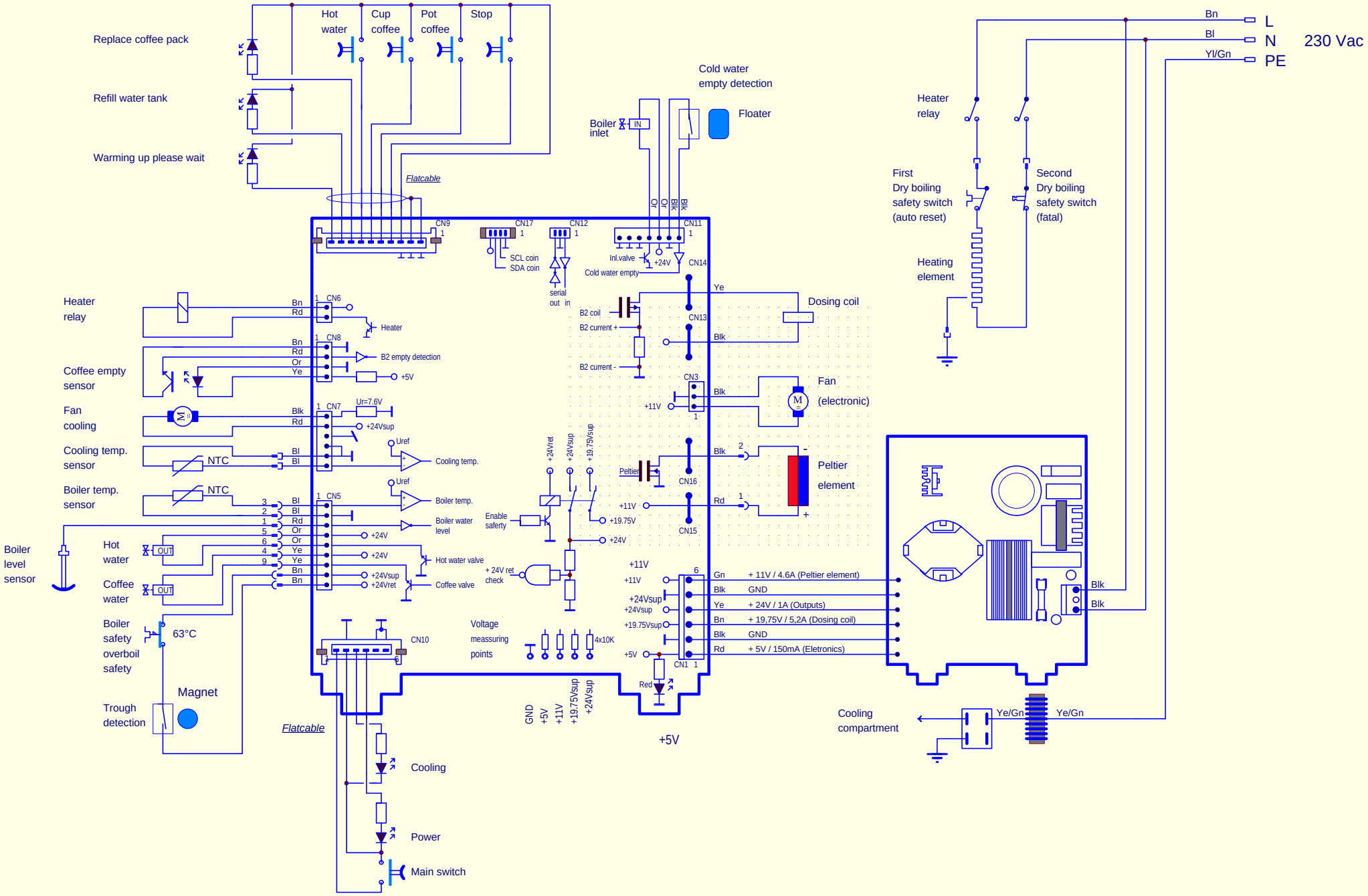
5 K Electrical Diagrams

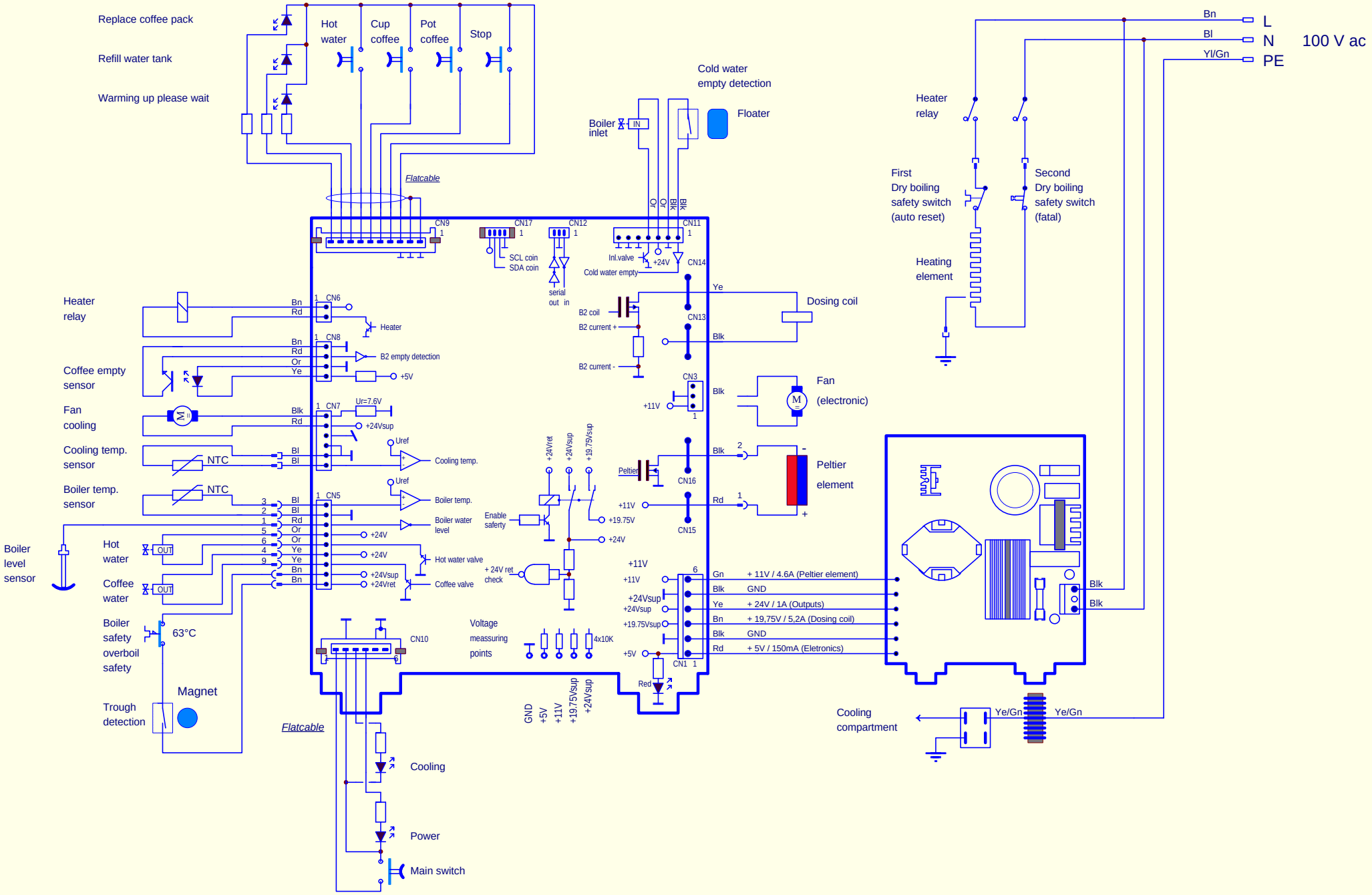
Contents

	Item
1.	Overview Electrical Diagram Contenta 230 V AC
2.	Overview Electrical Diagram Contenta 110 V AC
3.	Interface Diagram
4.	Boiler Diagram
5.	Power Supply and Security Relay
6.	Cooling Control
7.	Dosing Control
8.	Security Device Control
9.	Front Panel
10.	Side Panel & Cold Water Supply Unit
11.	Analog/Digital Converter
12.	CPU
13.	Coin System

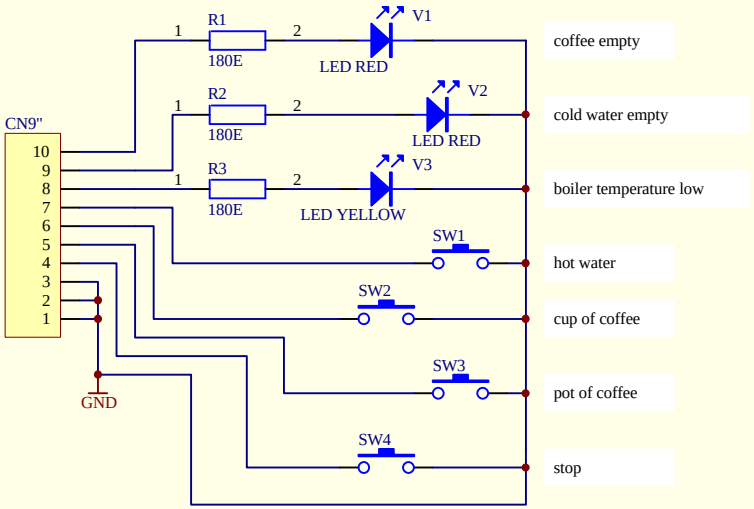
Contenta 230 V AC



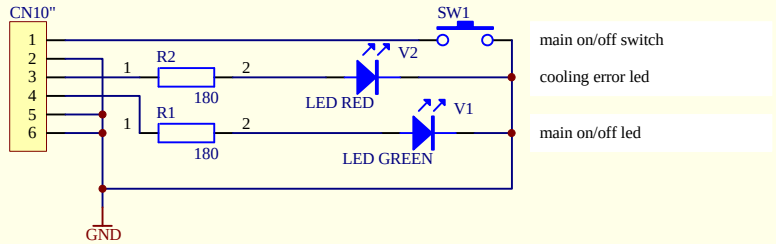
Contenta 100 V AC



Swatch front panel



Swatch side panel



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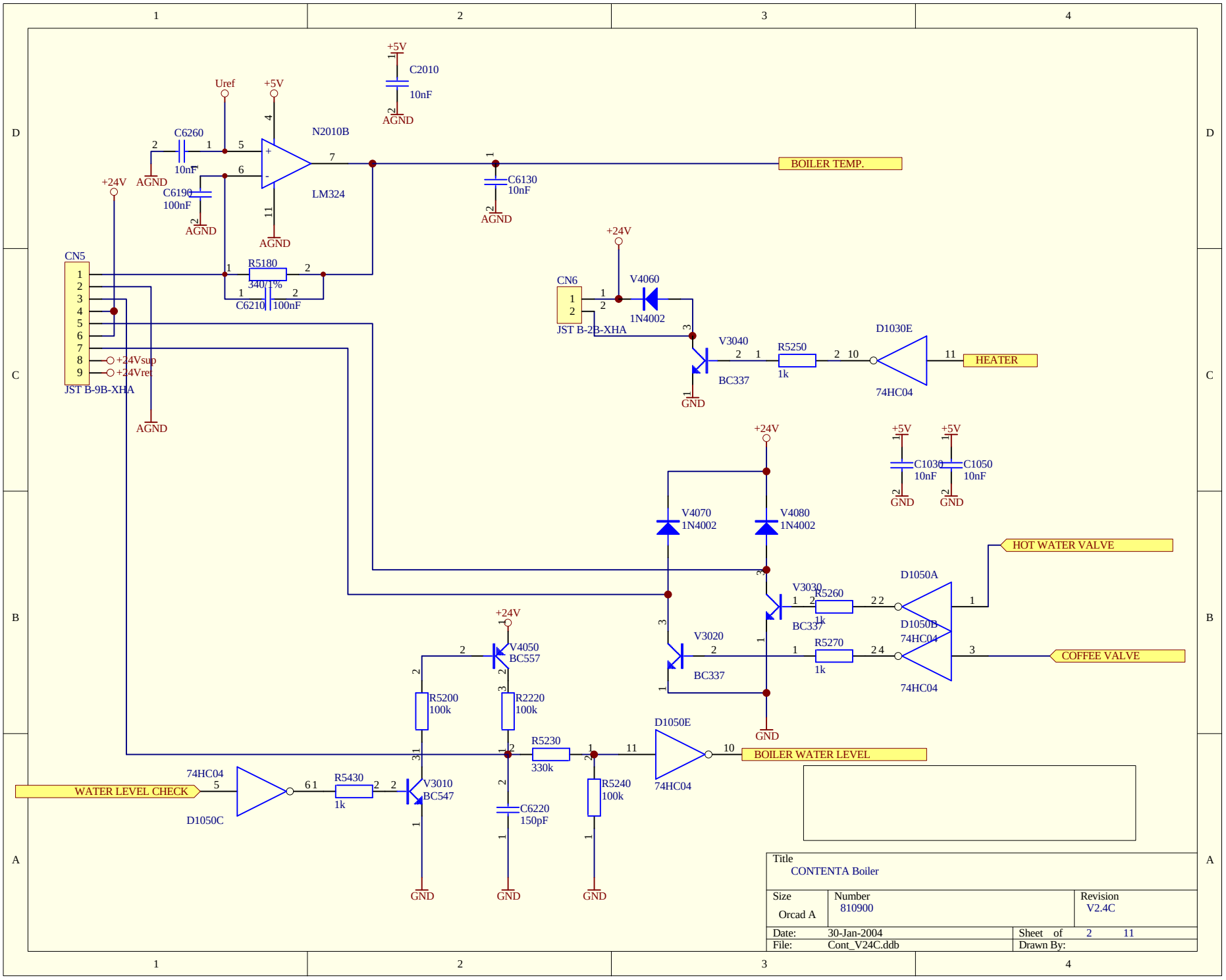
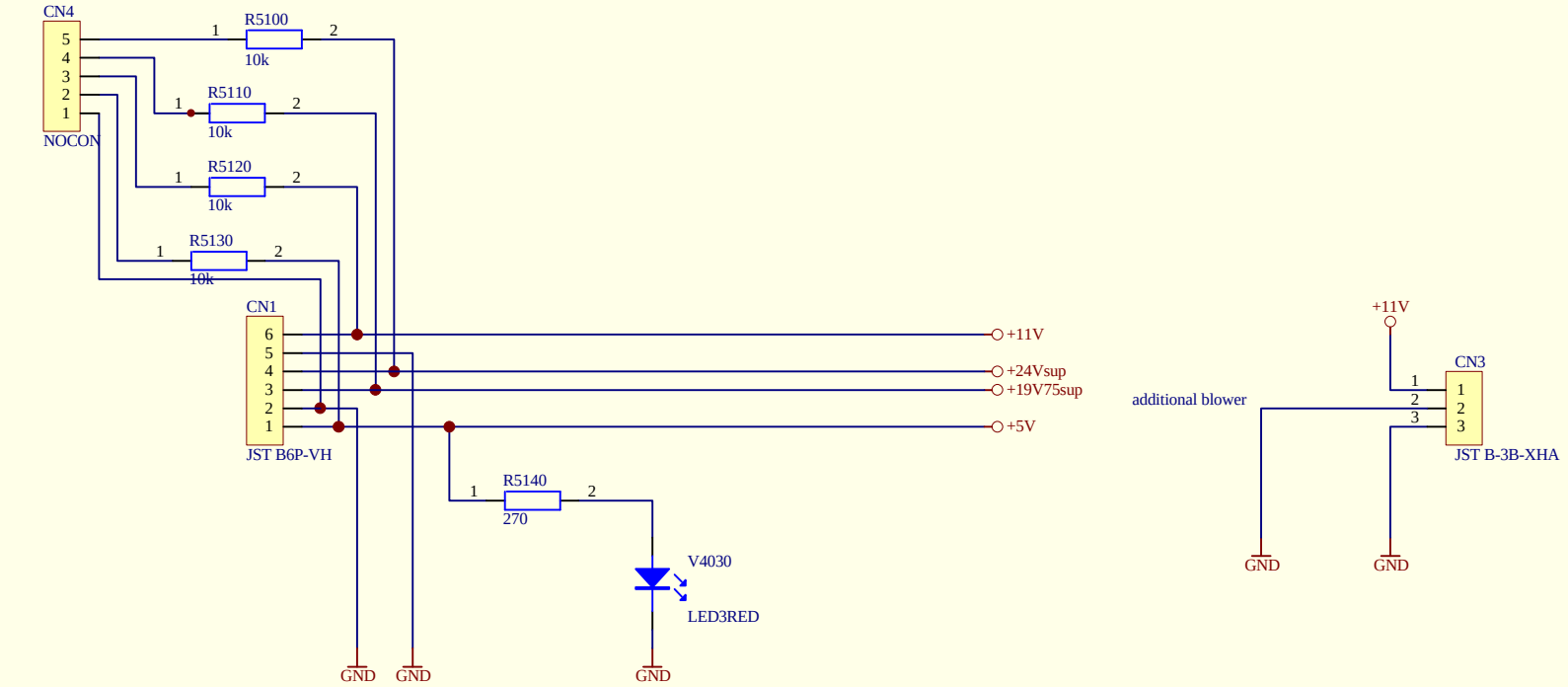
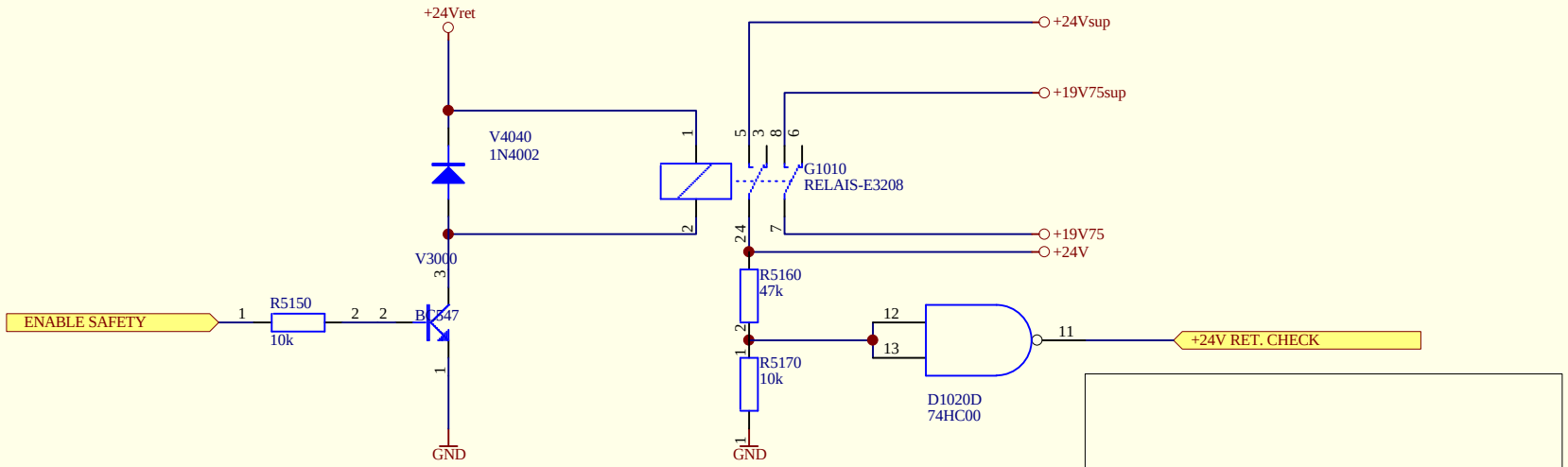

+5V
C2010
10nF
AGND
Uref
+5V
C6260
10nF
N2010B
LM324
C6190
100nF
AGND
C6130
10nF
BOILER TEMP.
+24V
CN5
JST B-9B-XHA
+24Vsup
+24Vreg
R5180
340 1%
C6210
100nF
CN6
JST B-2B-XHA
V4060
1N4002
V3040
BC337
R5250
1k
D1030E
74HC04
HEATER
GND
C1030
10nF
C1050
10nF
V4070
1N4002
V4080
1N4002
HOT WATER VALVE
V3030
BC337
R5260
1k
D1050A
D1050B
74HC04
V3020
BC337
R5270
1k
COFFEE VALVE
V4050
BC557
R5200
100k
R2220
100k
D1050E
R5230
330k
R5240
100k
BOILER WATER LEVEL
74HC04
WATER LEVEL CHECK
D1050C
R5430
1k
V3010
BC547
C6220
150pF
Title
CONTENTA Boiler
Size
Orcad A
Number
810900
Revision
V2.4C
Date:
30-Jan-2004
Sheet of 2 11
File:
Cont_V24C.ddb
Drawn By:





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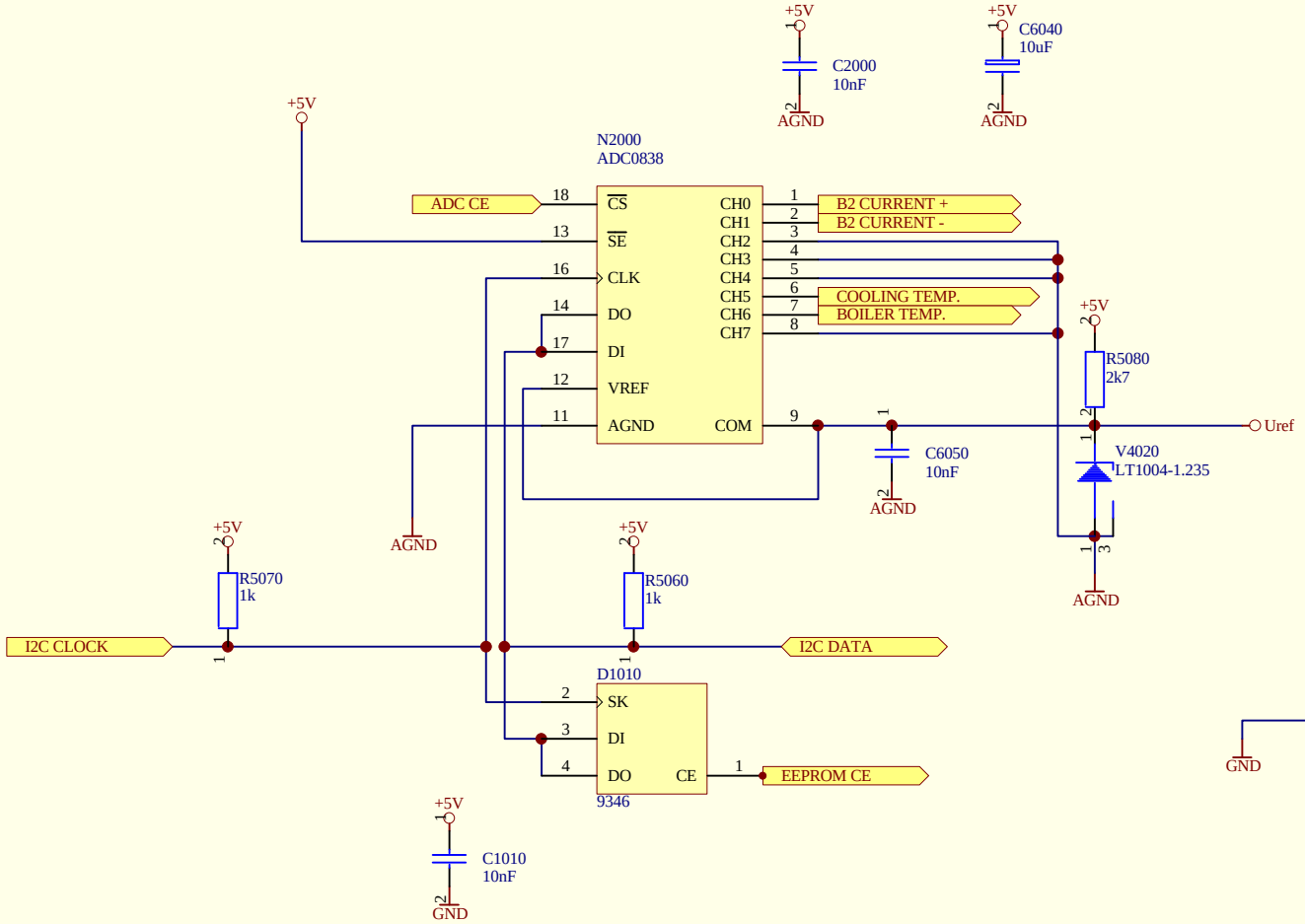
File: Cont_V24C.ddb	Drawn By:	



Title: CONTENTA AD converter		
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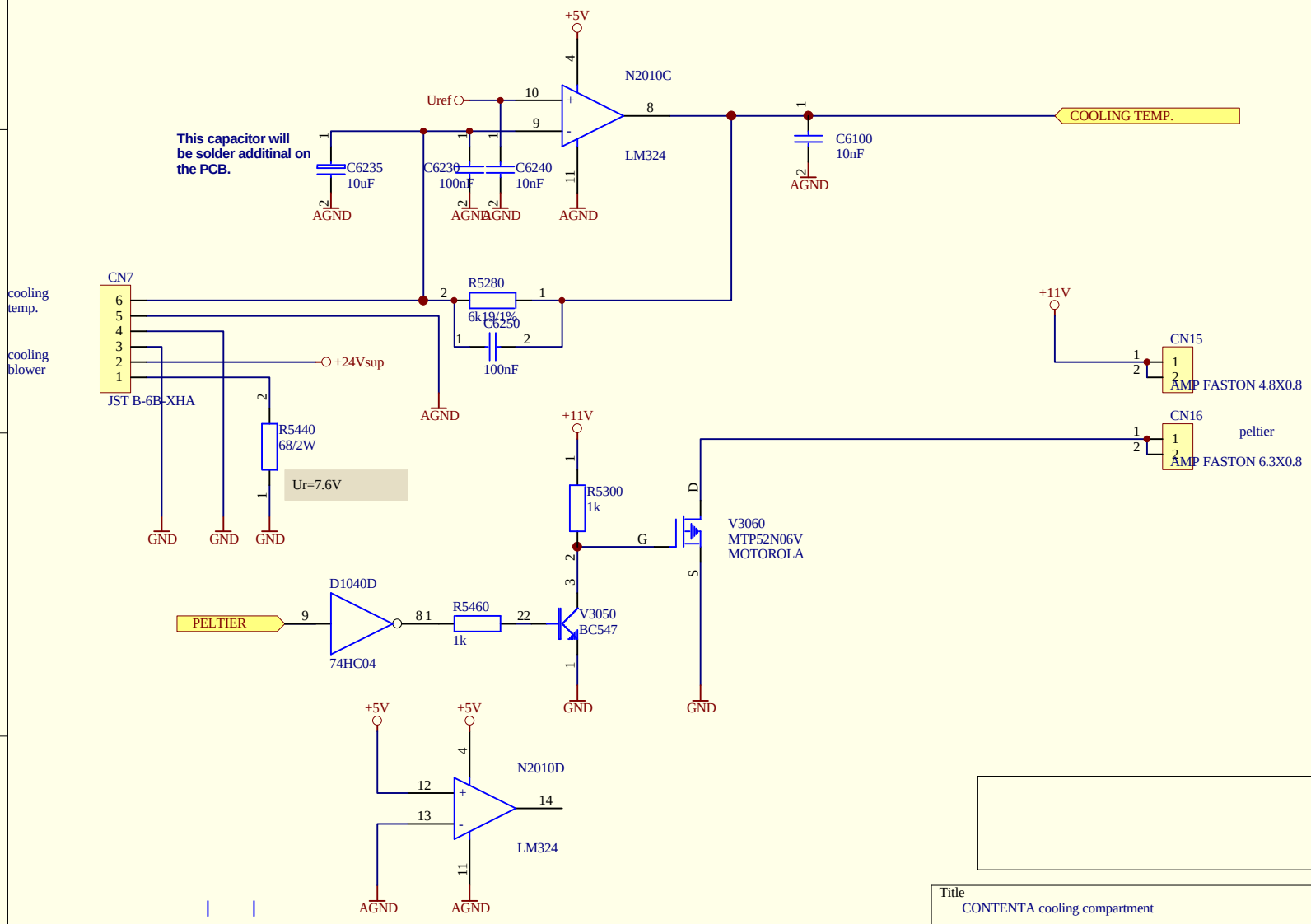
File: Cont_V24C.ddb	Drawn By:	



Title: CONTENTA cooling compartment		
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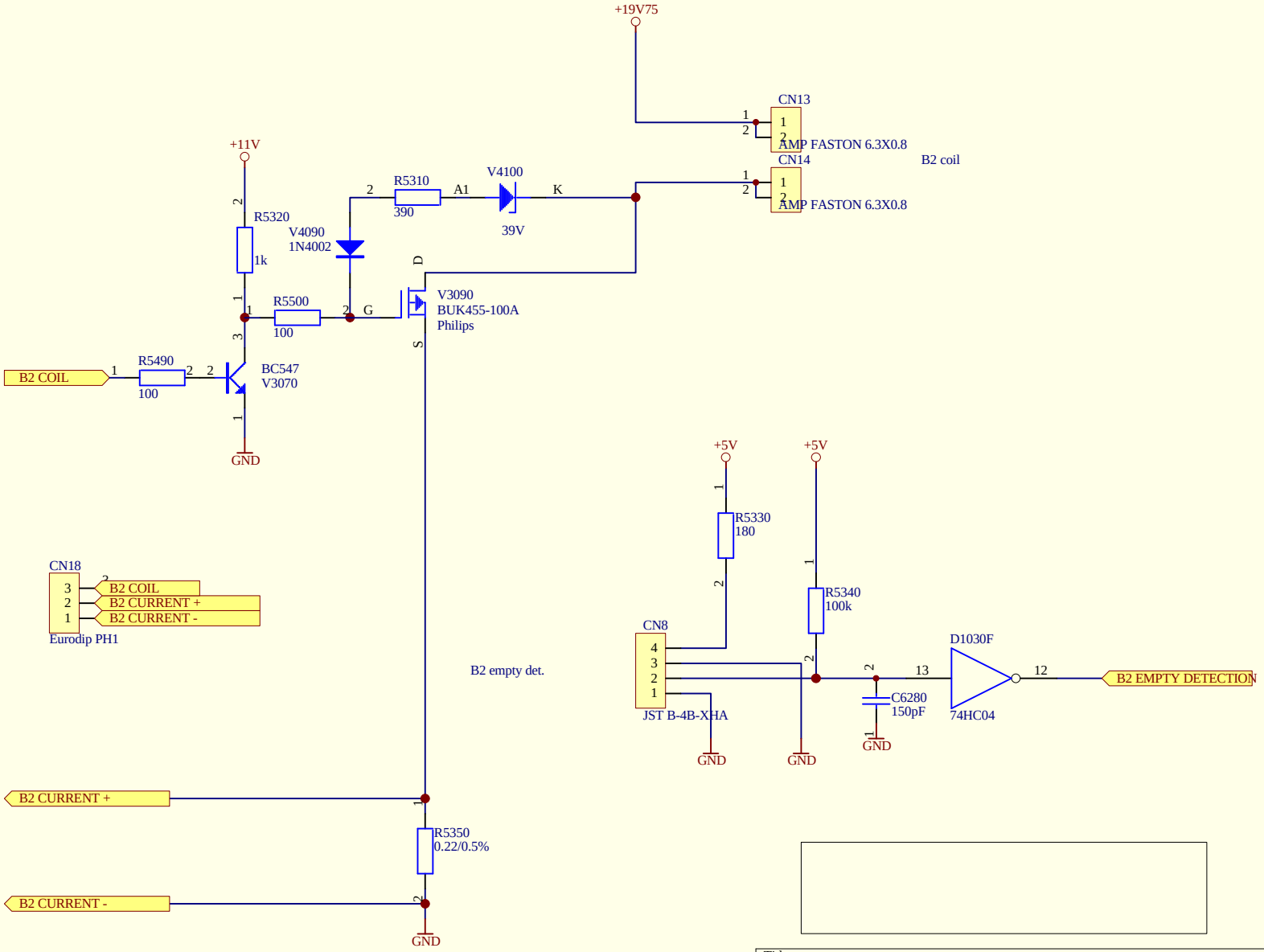

Title	CONTENTA Dosing Coil (B2)	
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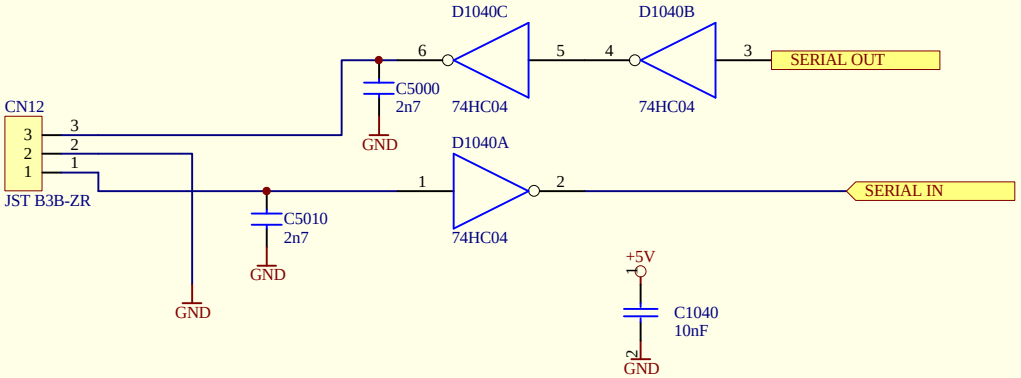
Date: 30-Jan-2004	Sheet of 6 11	
File: Cont_V24C.ddb	Drawn By:	



Title: CONTENTA Service Device			
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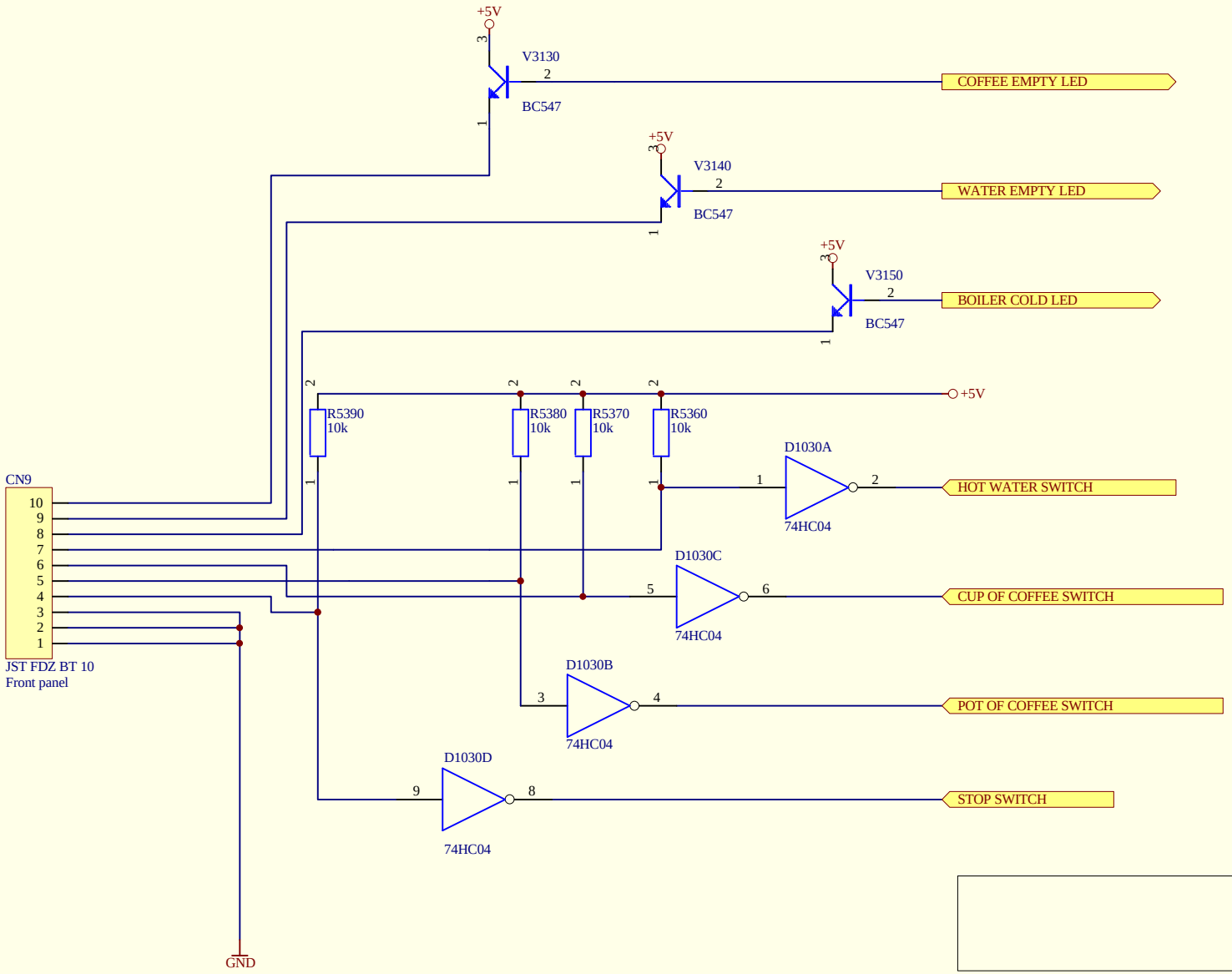
File: Cont_V24C.ddb		Drawn By:	



Title: CONTENTA Front Panel		
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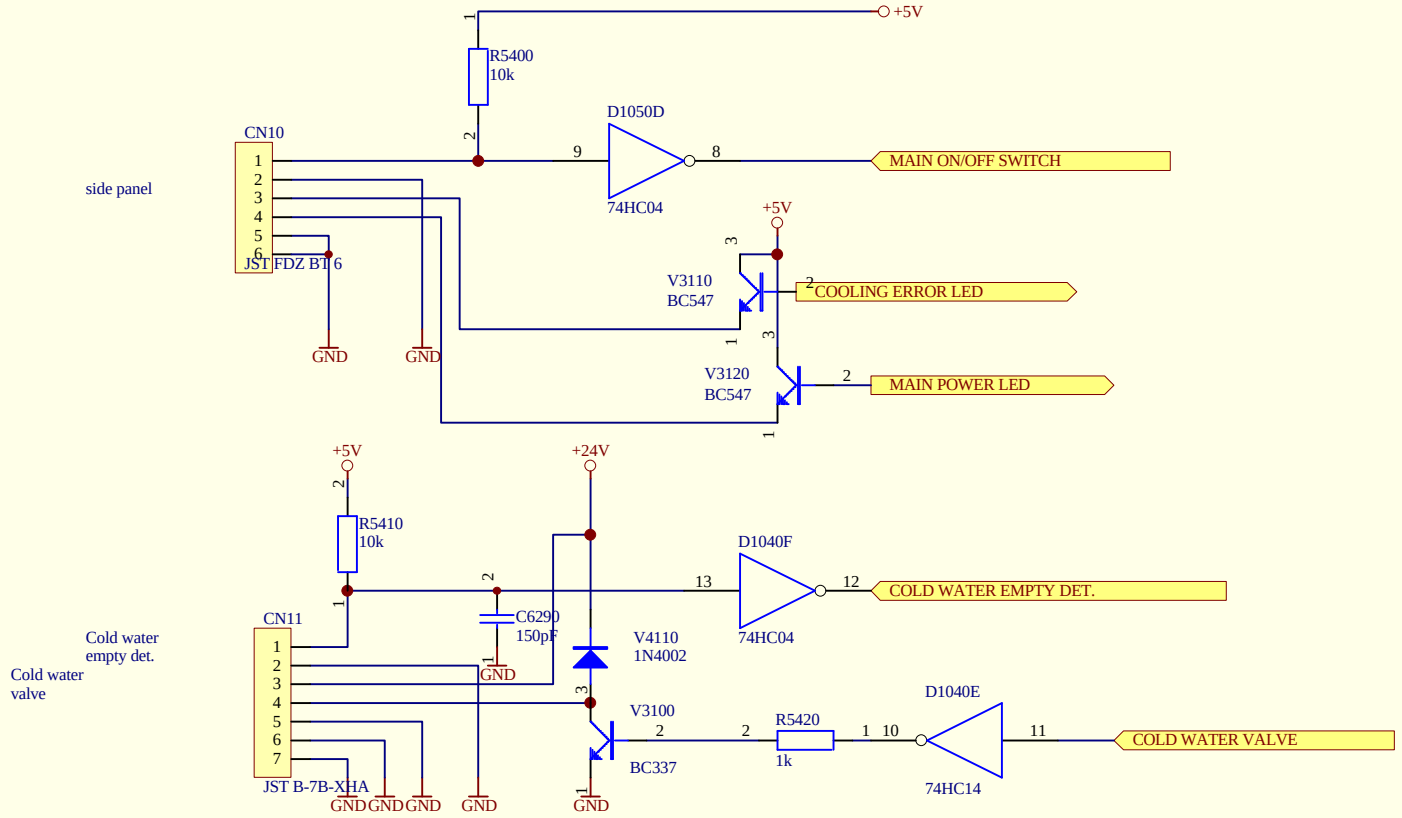

Title: CONTENTA Side Panel		
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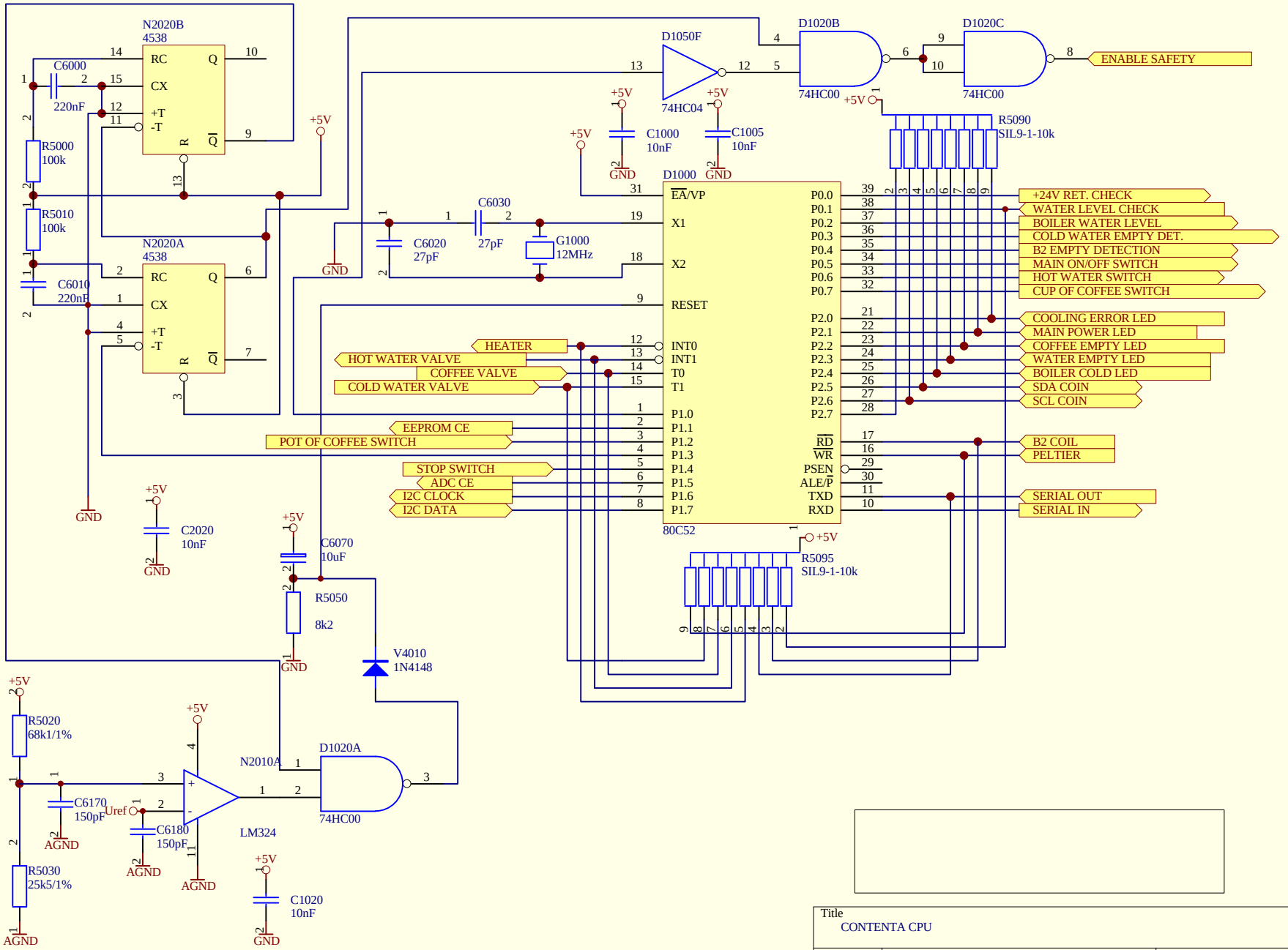
File: Cont_V24C.ddb	Drawn By:	



Title	CONTENTA CPU	
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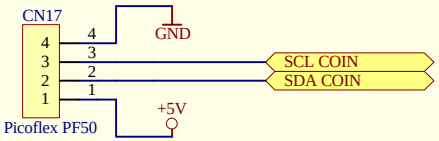
Date: 30-Jan-2004	Sheet of 10 11	
File: Cont_V24C.ddb	Drawn By:	



Error : decsgnt2.bmp file not found.

Title: Coin-interface			
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Date: 30-Jan-2004		Sheet of 11 11	
File: Cont_V24C.ddb		Drawn By:	

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6 Preventive Maintenance

Contents

02-2004 Not available

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7 SIS Codes

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D.	Product Delivery	3.
F.	Cooling System	4.
G.	Housing	4.
K.	Control	5.
L.	Options	5.

SIS Codes
Contenta
Cafitesse 50

Service code sequence

Activity code □□ S.I.S. code □□□ Corrective action code Z□□

Z	01	Exchange, defect
Z	02	Exchange, worn down
Z	03	Exchange, scale
Z	04	Exchange, dirty
Z	05	Exchange, scorched
Z	06	Descaled
Z	07	Cleaned
Z	08	Mechanical adjustment
Z	09	Electrical adjustment
Z	10	Programming
Z	11	Reset
Z	12	Instruction

Water system (A)

Handle, water tank
Part number **-**
SIS code **A11**

Water tank
Part number **19495**
SIS code **A12**

Glass, water level
Part number **-**
SIS code **A13**

Floater
Part number **-**
SIS code **A14**

Outlet, water tank
Part number **-**
SIS code **A15**

Sieve, water tank
Part number **3681**
SIS code **A16**

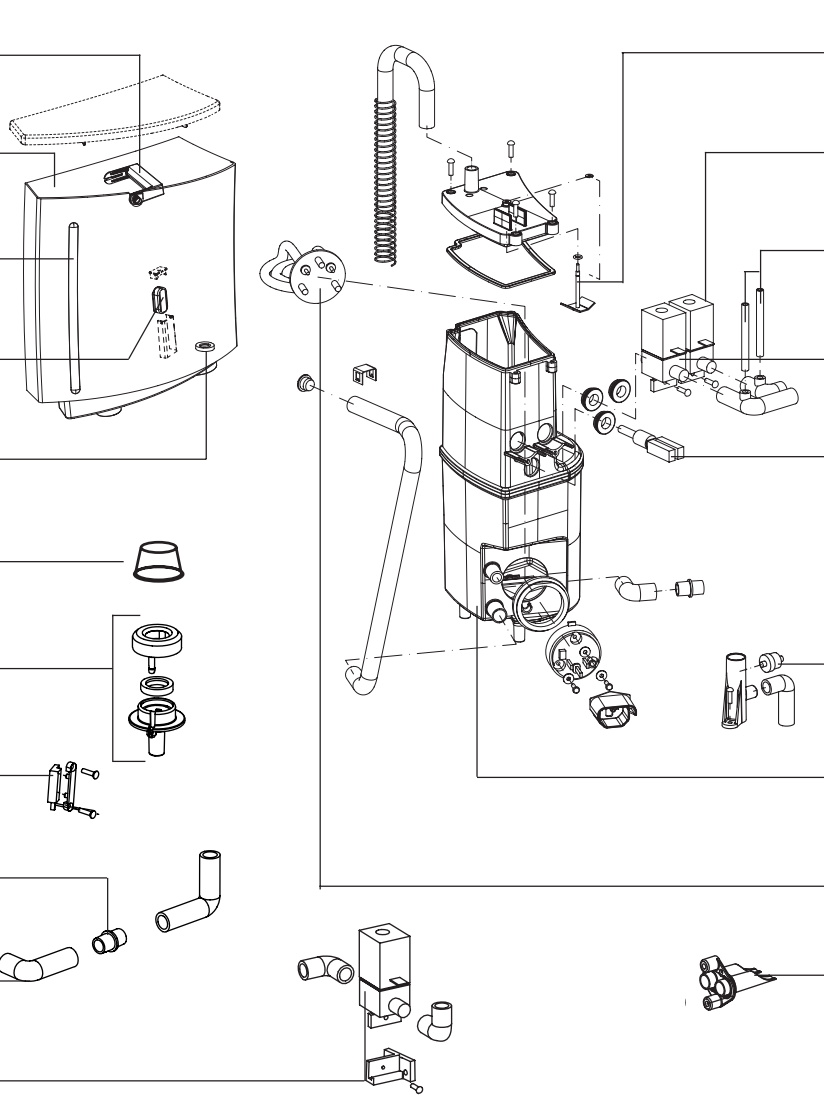
Inlet, water tank
Part number **19494**
SIS code **A17**

Level sensor, tank
Part number **19352**
SIS code **A18**

Hose connectors
Part number **18334**
SIS code **A19**

Hose 90 degrees
Part number **19483**
SIS code **A20**

Inlet valve
Part number **18113**
SIS code **A21**



Level sensor, boiler
Part number **-**
SIS code **A22**

Outlet valve, coffee
Part number **18113**
SIS code **A23**

Air vent
Part number **-**
SIS code **A24**

Outl.valve, hot water
Part number **18113**
SIS code **A25**

Temperature sensor
Part number **19158**
SIS code **A26**

Overboil safety
Part number **19199**
SIS code **A27**

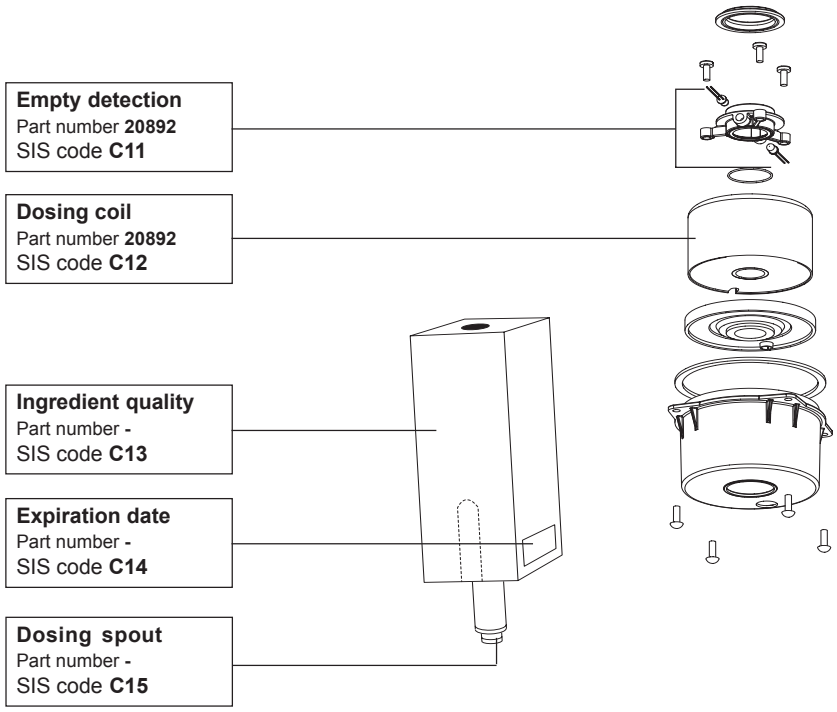
Boiler
Part number **19481**
SIS code **A28**

Heating element
Part number **-**
SIS code **A29**

Outlet nozzle
Part number **19296**
SIS code **A30**

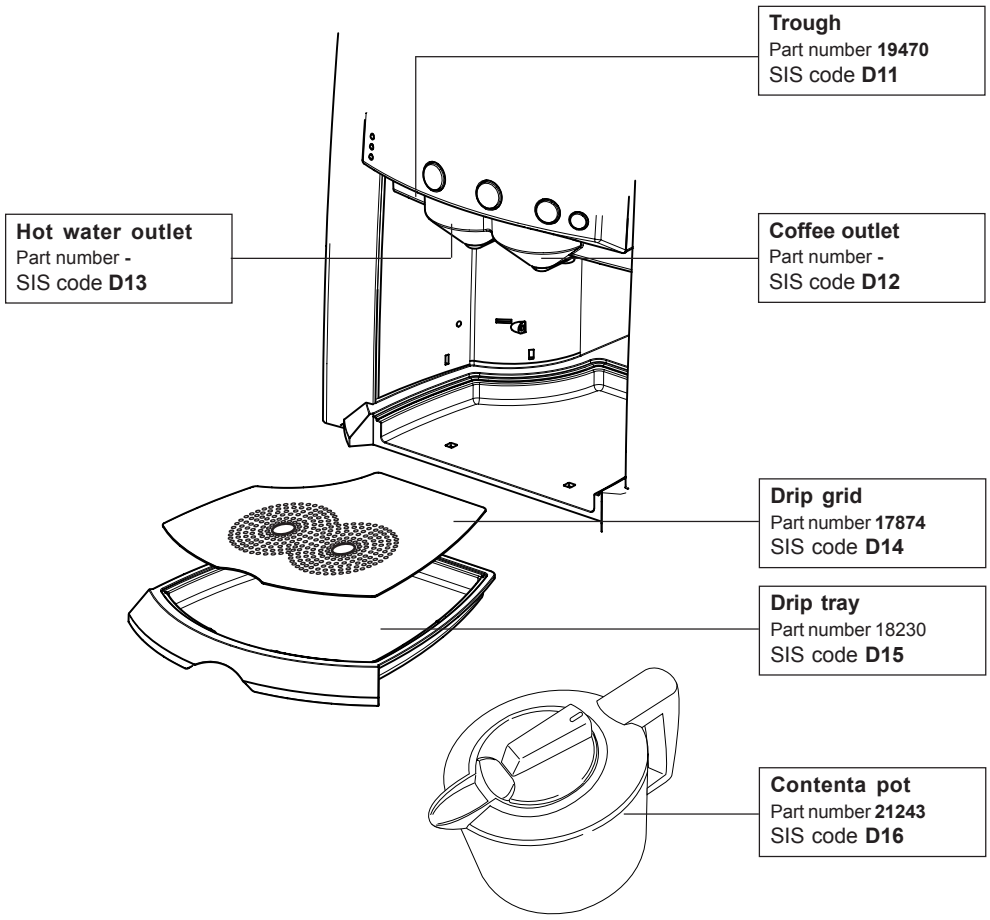
A10	Other fault in water system (general)	A17	Inlet, water tank	A24	Air vent
A11	Handel, water tank	A18	Level sensor, tank	A25	Outlet valve, hot water
A12	Watertank	A19	Hose connectors	A26	Temperature sensor
A13	Glass, water level	A20	Hoses, 90 degrees angle	A27	Overboil safety
A14	Floater	A21	Inlet valve	A28	Boiler
A15	Outlet water tank	A22	Level sensor, boiler	A29	Heating element
A16	Sieve, water tank	A23	Outlet valve, coffee	A30	Outlet nozzle

Dosing system (C)



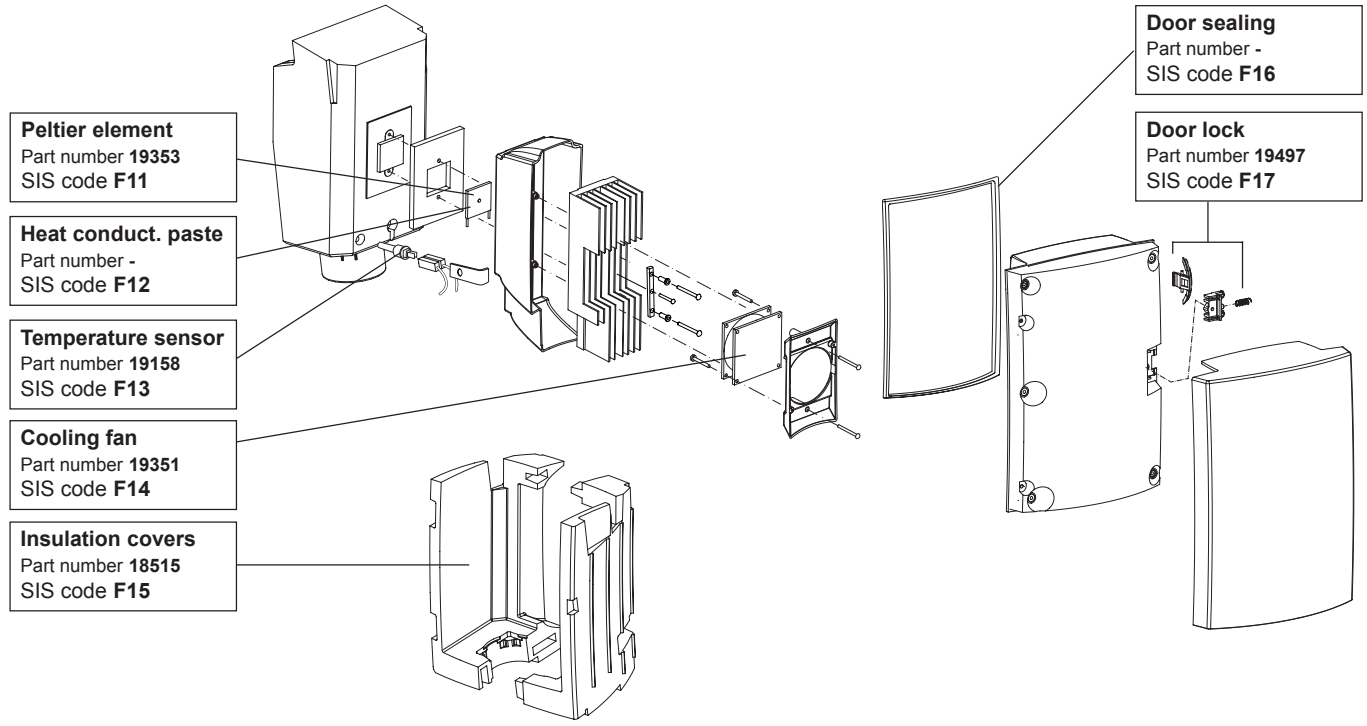
C10	Other fault in dosing system (general)	C13	Ingredient quality
C11	Empty detection	C14	Expiration date
C12	Dosing coil	C15	Dosing spout

Product delivery (D)



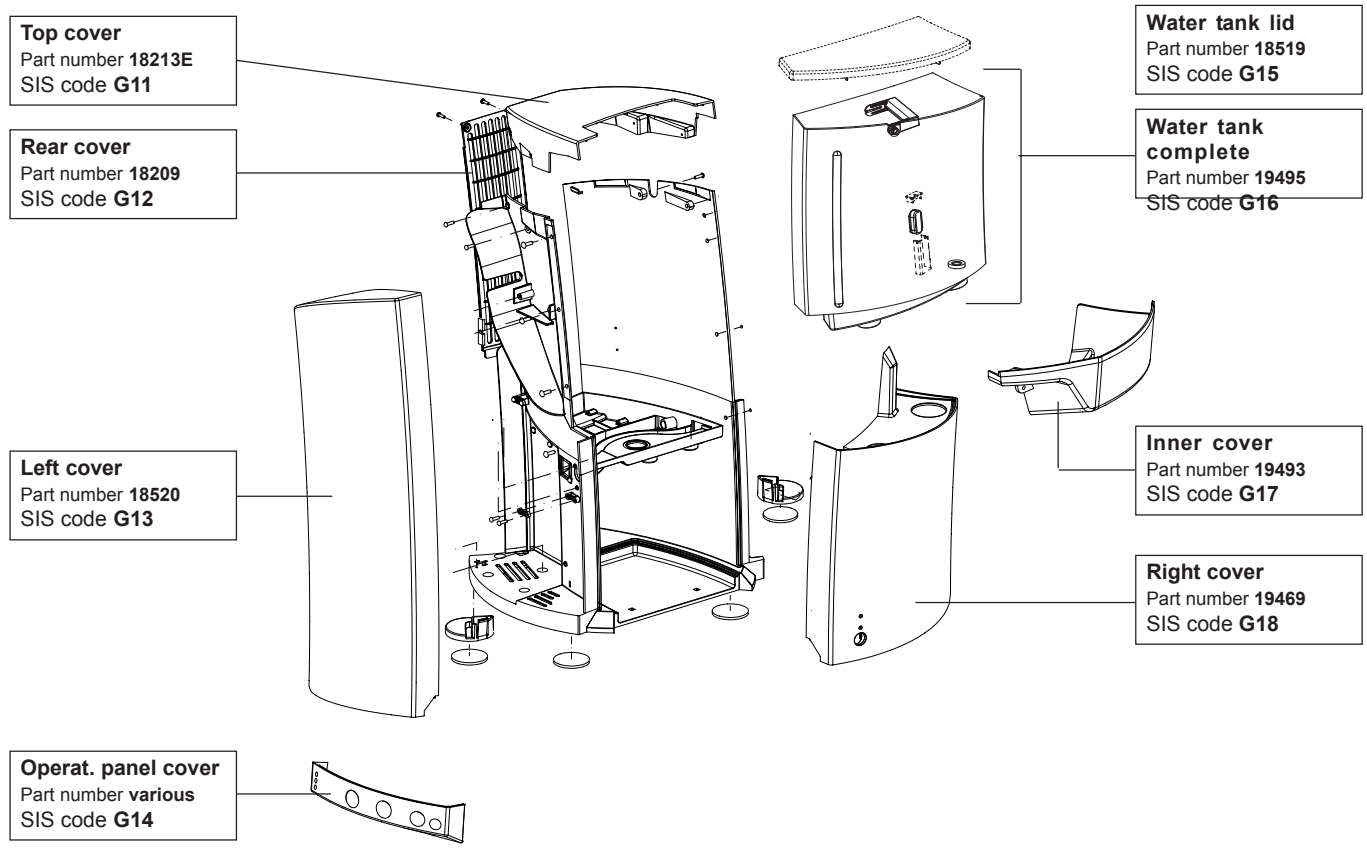
D10	Other fault in product delivery (general)	D14	Drip grid
D11	Trough	D15	Drip tray
D12	Coffee outlet	D16	Contenta pot
D13	Hot water outlet		

Cooling system (F)



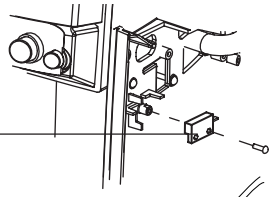
F10	Other fault in cooling system (general)	F13	Temperature sensor	F16	Door seal
F11	Peltier element	F14	Cooling fan	F17	Door locking mechanism
F12	Heat conductive paste	F15	Insulation covers		

Housing (G)

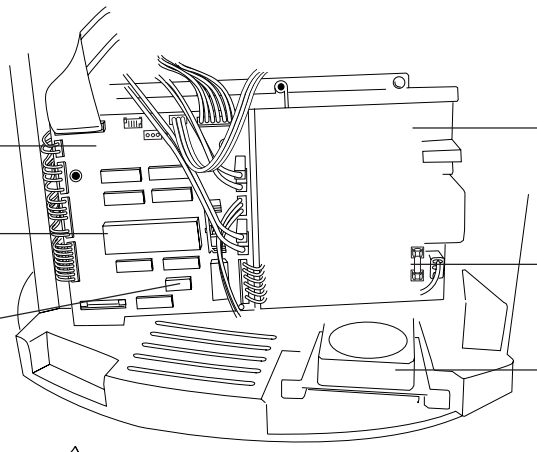


G10	Other fault in housing (general)	G15	Water tank lid
G11	Top cover	G16	Water tank complete
G12	Rear cover	G17	Inner cover
G13	Left cover	G18	Right cover
G14	Operation panel cover		

Control (K)



Reed sensor
Part number
SIS code **K11**



Control PCB
Part number **19200**
SIS code **K12**

Micro-processor
Part number **-**
SIS code **K13**

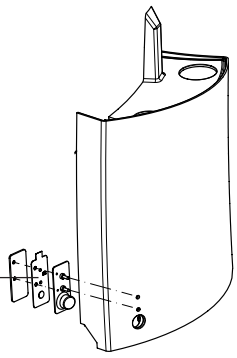
EEPROM
Part number **-**
SIS code **K14**

Wiring/connectors
Part number **Various**
SIS code **K15**

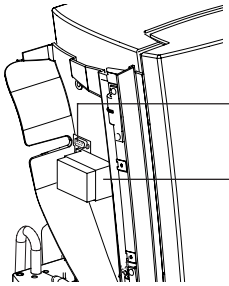
Power supply PCB
Part number **19201**
SIS code **K17**

Fuse
Part number **-**
SIS code **K18**

Electronics fan
Part number **19350**
SIS code **K19**

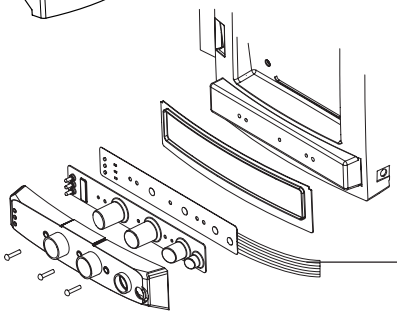


Side panel board
Part number **19164**
SIS code **K16**



SD connector
Part number **-**
SIS code **K20**

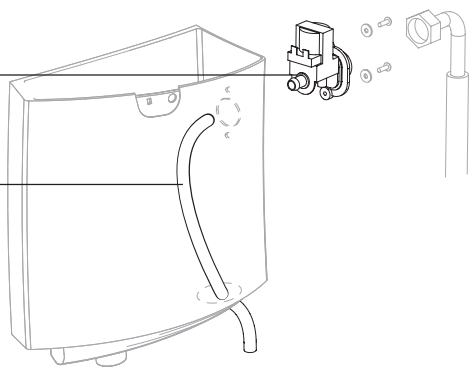
Relay
Part number **19198**
SIS code **K21**



Operation panel PCB
Part number **19163**
SIS code **K22**

K10	Other fault in control system (general)	K16	Side panel board		
K11	Reed sensor, trough detection	K17	Power supply board		
K12	Control PCB	K18	Fuse	K22	Operation panel PCB
K13	Micro processor	K19	Electronics fan		
K14	EEPROM	K20	Service device connector		
K15	Wiring & connectors	K21	Relay		

Options (L)



Valve
Part number **22811**
SIS code **L11**

Silicon hose
Part number **19230**
SIS code **L12**

L10	Other fault in Fixed water connection (general)
L11	2-Way valve 24V, to kit water connection
L12	Silicon hose

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8 Service Information Bulletins

Contents

02-2004 Not available

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9 Modification Instructions

Contents

02-2004	Not available

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